The Chemical Age

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Contents

NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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Low-Temperature Carbonisation

THE discussion on low-temperature carbonisation which took place at the London Fuel Conference on Tuesday did a great deal of good. It is true that no great new discoveries were revealed, but the method and the products obtained by its use were very soundly criticised by specialists in a number of aspects of fuel technology. The cautious phraseology of the Fuel Research Board in dealing with its own work on low-temperature carbonisation has made it abundantly clear in the last few years that while the method shows great promise, there is still much to be done in investigating it. This was emphasised at the meeting on Tuesday, for example, by various representatives of the oil interests, who showed that there are immense gaps in our knowledge of the liquid products of low-temperature carbonisation, and that until these gaps are filled much of what is said regarding the use of these products will remain mere words.

Mr. P. C. Pope is to be congratulated for his courage in saying what he did say in regard to certain economic aspects of the matter under discussion. The most impressive thing about his contribution to the debate was the manner in which it was based on real facts and figures and careful calculation, and those who heard it will probably be stimulated to do some hard thinking on the subject on their own account. It is probable that Mr. Pope's remarks will not remain unanswered, but free discussion of the matter can do nothing but good. There is no doubt that one of the weakest sides of the case for low-temperature carbonisation as hitherto presented has been the almost entire absence of accurate, complete, and detailed figures. It is true that in some cases these have been forthcoming, but in general they have been conspicuous by their absence. Until such figures are presented so that they can be properly analysed, there is no doubt that many people who desire to regard low-temperature carbonisation in a benevolent light will continue to treat it with reserve.

Artificial Silk Research

THE statement made at the annual meeting of the British Cotton Industry Research Association with regard to the inauguration of a department to deal with artificial silk was of very great importance. The production of this fibre is increasing apace, and the possibilities offered by it are so enormous that prophets may well hesitate to set limits to its future. The cotton industry in itself is in such a bad way that there is probably a secret general hope that the artificial silk industry will redress the balance. It will be interesting to see in what way the big artificial silk interests react to this new development, but in any case such problems as the use of artificial silk in mixed fabrics, to quote only one example, are of enormous interest to the textile world in general. This latest development shows in a peculiarly striking way the great strength and advantages which British industry derives from the existence of the research associations. In many countries abroad, the artificial silk industry flourishes exceedingly; yet in none of them is there a centralised, authoritative body capable of investigating efficiently any problem which arises. The artificial silk industry differs in many ways from the other industries of the country. It is one of the youngest, and more, almost, than any other, it is based on pure science. On this very account it is, we think, in a position to respond very quickly to the application of research to its problems. In some other cases, such as the cotton industry itself, the fundamental problems arising are of their very nature such as to demand many years of work before fruitful results are produced. The problems of artificial silk, numerous and difficult as they are, are in a somewhat different category, and it may be confidently predicted that the department of artificial silk research will very soon pay for its keep.

The Hydrogenation of Coal

THE report of the Fuel Research Board gives some highly interesting information with regard to the position of research on coal hydrogenation in Great Britain. An option on the rights of the Bergius process was given some time ago by various agreements between the Department of Scientific and Industrial Research, the British Bergius Syndicate, and the International Bergin Co. Dr. Lander now states in his report that Imperial Chemical Industries have acquired a controlling interest in the British Bergius Syndicate, and are experimenting at their own works. He is of the opinion that I.C.I. is in an exceptionally favourable position for developing the process. Furthermore, it is essential that all the products of the process should be utilised to the best advantage, and Dr. Lander supports the view (which has been frequently expressed before) that the best results would be obtained by combining a hydrogenation plant with a coke-oven plant and with the manufacture of synthetic ammonia, and possibly also with low-temperature carbonisation plant. It appears from the Fuel Research Report that the actual examination of the commercial aspect of the hydrogenation of coal is being left to I.C.I., while the Fuel Research Board is devoting itself to the investigation of the fundamental chemical reactions involved. As was announced in these columns a few weeks ago, great developments are taking place in Germany in connection with the joint operation of coke-oven and synthetic ammonia plant. So far, no developments of this kind are known to have taken place in this country, but it will be interesting to see what the future holds in store.

Synthetic Fertiliser Costs

THE report that the German Nitrogen Syndicate, owing to an increase in German railway tariffs, has increased the price of its synthetic ammonium sulphate by 1s. per 1,000 kilos., has created something of a stir. Up to now, all calculations regarding synthetic nitrogenous fertilisers have been vitiated by the fact that nothing was known about the producers' costs. It is now argued in some circles that if the Germans find it necessary to counter a small increase in railway rates by raising their prices by 1s. per 1,000 kilos., then their margin of profit must be small. It is suggested that in this case the limit of low prices of synthetic nitrogenous fertilisers has been reached, and that possibly the time is ripe for discussions between the synthetic producers and the producers of Chile nitrate. Time will show whether these speculations are borne out by events.

Home Once More

WITH the matter and illustrations published in this issue our notes on the Canadian and American tour of the British chemical engineers and members of the Society of Chemical Industry come to an end. Most of the travellers are now back in England, and they are unanimous in their expressions of satisfaction at their experiences. If the tour were being planned again, certain features, on this side, would probably not be repeated; planned as it was, the tour was as successful as anyone could hope for. On the American side, if it were being re-planned, it would be difficult to suggest any possible improvement. The arrangements were perfect, the hospitality lavish. The specific benefits in the way of technical information gained vary with the personal initiative of the members, but the general educational advantages of the visit are beyond question. The feeling is general on both sides that these international exchange visits should be continued, though with reasonably long intervals between. When our American hosts next visit England as our guests, it will be no easy task to equal the welcome they prepared. But we have no doubt it can and will be done. The editor of THE CHEMICAL AGE, who accompanied the tour throughout, would like to acknowledge the many courtesies received from American friends on the train tour from Quebec to Washington, during the week in New York, and particularly at the annual meeting of the American Chemical Society at Swampscott.

Books Received

VOLUMETRIC ANALYSIS. By Dr I. M. Kolthoff and Dr. Ing. H. Menzel. London: Chapman and Hall, Ltd. New York: John Wiley and Sons, Inc. Pp. 290. 15s.

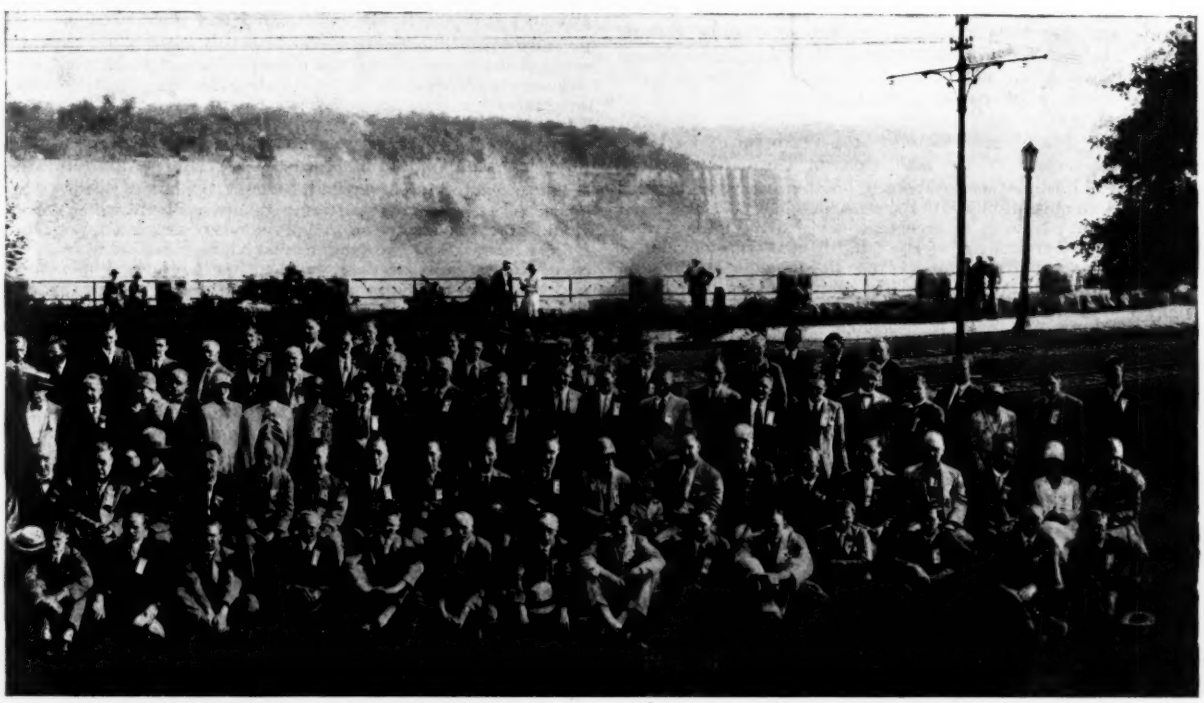
FEEDING STUFFS. By Arthur S. Carlos. London: Chapman and Hall, Ltd. Pp. 152. 5s.

A TEXT-BOOK OF QUANTITATIVE CHEMICAL ANALYSIS. By Alex. Charles Cumming and Sydney Alexander Kay. London: Gurney and Jackson. Pp. 440. 15s.

The Calendar

Oct.		
8	Institute of Metals (Scottish Section): Chairman's Address. S. E. Flack. 7.30 p.m.	39, Elmbank Crescent Glasgow.
8	Ceramic Society: "A New Pottery Oven." Harold J. Plant. 7.30 p.m.	North Staffordshire Technical College, Stoke-on-Trent.
9	Institute of Metals (N. E. Coast Section): Chairman's Address. Dr. J. A. Smythe. 7.30 p.m.	Armstrong College., Newcastle-on-Tyne
9	Institution of Petroleum Technologists. 5.30 p.m.	John Street, Adelphi, London.
10	Institute of Metals (Swansea Section): Address by J. H. Grant. 7 p.m.	Thomas' Café, High Street, Swansea.
10 & 11	Ceramic Society: Building Materials Section. "Modern Facing Bricks," A. B. Searle. "Thermal Insulation," Colin Presswood. "Modern Brick Machinery and Works Layout." The Pragos Engineering Co.	Stoke-on-Trent.
11	Institute of Metals (London Section): Chairman's Address. Dr. S. W. Smith. 7.30 p.m.	83, Pall Mall, London.
11	Institute of Chemistry (Manchester Section): "Past and Present in Chemical Teaching." Professor Arthur Smithells.	Engineers' Club, Albert Square, Manchester.
11	Optical Society: Ordinary Meeting. 7.30 p.m.	Imperial College of Science and Technology, South Kensington, London.
12	Institute of Metals (Sheffield Section): "Alternating Current Electrolysis." R. D. Barklie. "Sodium Cyanide in Silver Plating." E. B. Sanigar. 7.30 p.m.	University, Sheffield.
13 & 14	Ceramic Society: Refractory Materials Section Meeting.	Glasgow.
15	Institute of Metals (Sheffield Section): Sorby Lecture: "Influence of Pressure on Rocks and Metals." Cosmo Johns. 7.30 p.m.	University, Sheffield.
15	University of Birmingham Chemical Society: "Recent Views on the Structure of Cellulose." Professor W. N. Haworth.	University, Birmingham.

A panoramic photograph, taken at Niagara Falls, of the party of Chemical Engineers and members of the Society of Chemical Industry on tour through Canada and United States. The photograph was taken on the Canadian side of the Gorge and shows (upper section) the American Falls and (lower section) the Canadian Horseshoe Falls on extr me right.



Low-Temperature Carbonisation at the Fuel Conference

An Interesting Discussion

On Tuesday, at the World Power Conference, at the Imperial Institute, London, Section Q (Low-Temperature Carbonisation) held its meeting, when three papers were discussed.

Drs. C. H. Lander and F. S. Sinnatt, Director and Assistant-Director of Fuel Research in Great Britain respectively, contributed a paper on low-temperature carbonisation, in which they summarised the position of affairs in this country. They said that the steady developments which had taken place, both at the Fuel Research Station and in connection with the many firms and individuals interested in these processes, were gradually removing the economic and social uncertainties; and, while it was still too early to forecast the evolution of a new industry to deal with the carbonisation of millions of tons of coal per annum, there was little doubt that such circumstances existed in various localities as allowed of definite processes being introduced with reasonable hope of commercial success. At what point such developments would find their economic level no one could predict.

Four Possible Applications of Plants

There were four types of application of low-temperature carbonisation plants to bituminous coal in this country. These were plants auxiliary to high-temperature apparatus at gasworks; plant at collieries, especially where good quality fine coal was available at a favourable price; independent plants; and co-ordinated plants, that is, plants run in conjunction with boiler plants in electric stations or large industrial works which would normally purchase a low-grade slack for their fuel.

Some sixteen plants in this country were known to the authors of which units capable of dealing with about 10 tons a day were in existence, or in course of erection. The plants might be separated into two main groups:—(*a*) Those in which the solid product of carbonisation was obtained in lump form sufficiently robust for transport and suitable for ordinary domestic grates. Such processes were the Coalite, Crozier, Dvorkovitz, Fuel Research, Hird, Illingworth, K.S.G., Maclaurin, Midland Coal Products, Plassman, Sutcliffe, and Turner. (*b*) Those in which the solid residue was mainly small in size. It must be recognised, however, that a proportion might be obtained in lump form. The product would be utilised as pulverised fuel or converted into briquettes. Such plants were the Freeman Multiple Retort, Fusion Rotary Retort, "L. and N." process, Merz and McLellan, and Salermo system.

Position in Germany

Dr. R. Heinze, of the Verein Deutscher Chemiker, presented a paper on "The Present State of Low-Temperature Carbonisation in Germany." He said that in Germany, for the treatment of bituminous brown coal, low-temperature carbonisation was an old-established process, which had been practised in Central Germany on a large scale for nearly eighty years. As regards the treatment of true (hard) coal, this developed owing to the impetus given by the oil shortage during and after the war. The quality of the semi-coke produced was neglected at the time, and after the resumption of normal conditions, only those processes survived which produced a saleable coke. The rotary retort developed by the Kohlenscheidungs-Gesellschaft (K.S.G.) was the only one still in operation. Oil shale was also treated in Germany by low-temperature carbonisation at a few places; twenty-four large ovens were in operation at Darmstadt.

Dr.-Ing. P. Rosin, of Germany, presented a paper on "The Possibilities of Co-ordination Between Coal Processing and the Production of Electricity."

Discussion

In the discussion which followed, Dr. Sinnatt said that from the paper by Dr. Lander and himself, it was clear that there were in this country 17 processes in a state of development, and he added another three, making a total of 20. Of these, seven had undergone the test which the Department of Scientific and Industrial Research was ready to carry out at the Government expense, and in every case the claims of those responsible for the plants had been fulfilled. We, in this country, tended to be rather too modest, but he believed it was not unfair to say that, in connection with the development of low-temperature carbonisation, Great Britain was in advance of other countries.

Low-Temperature Tar

Mr. H. Nielsen said that he disagreed fundamentally with the statement in the paper by Dr. Lander and Dr. Sinnatt that "investigations of low-temperature tar do not appear at this stage to have revealed any special feature likely to raise its commercial value above that of high-temperature tar." The Fuel Research Board, he said, were dealing with a product which had been more or less cracked; it was not a primary product. Work carried out by the group with which he (Mr. Nielsen) was associated, in examining low-temperature tar obtained from the Fuel Research Board and high-temperature tar produced by steaming in vertical retorts, showed that there was a great similarity between the two, but when it came to the production of an uncracked primary product it was quite another matter. Indicating the attitude to be adopted for ensuring the future prosperity of low-temperature carbonisation, he said that coal was the basic industry in this country, but it could not be exported in such quantities as previously, and the only remedy, in his view, was to export a more refined article—a safe powdered fuel for ships.

Financial Aspects

Mr. P. C. Pope (secretary, Institute of Fuel), who emphasised that the views he expressed were his own personal views, and not those of the Institute, called attention to one important but much-neglected commercial aspect of low-temperature carbonisation which needed very serious consideration before inviting the public to invest their money in plants of this kind, namely, the heavy burden on the debit side of the balance sheet due to depreciation and obsolescence of plant, a reasonable reserve fund, and the dividend naturally expected by investors.

He believed most people who had followed closely the varying fortunes of the many projected and the few operating low-temperature plants in this country for dealing with bituminous coal would readily agree that any plant designed and put into operation to-day would probably be obsolete in seven or eight years, due to improvements in design and the greater economy in operating costs which naturally would be the outcome of a few years' experience of large-scale working. Thus, it would be necessary to write off an annual sum equal to 15 per cent. of the total capital cost of the plant. A further annual amount of at least 5 per cent. per annum must be allocated to a reserve fund, and the holders of such speculative investments as low-temperature carbonisation shares would expect to receive annual dividends of at least 10 per cent.

This meant that the plants must yield a cash margin of at least 30 per cent. on capital cost after paying all operating, maintenance, supervision and sales charges, as well as the cost of the raw coal treated. A plant for carbonising 500 tons of coal per day and converting it into semi-coke, crude tar, crude spirit and unpurified gas, but not distilling or refining any of its liquid or gaseous products, naturally varied as to capital cost over a very wide range, according to design. Various estimates given to him for such a plant delivered and erected on a site provided ranged from £75,000 to £180,000. No plant of that description could be expected to operate at full output every day of the year. It must be shut down periodically for cleaning, overhaul and repairs; in addition to which, market fluctuations in the demand for its saleable products would necessitate variation in output. Therefore, it might be assumed that the annual throughput of coal in a 500 tons per day plant would not exceed 150,000 tons.

Heavy Charges

If, therefore, the capital cost of the plant were £70,000, the plant would have to stand a charge, in addition to raw material, operating and other costs, of £21,000 per annum, or 2s. 9½d. per ton of coal treated. Should the plant cost £180,000, the annual amount to be debited to capital charges

would be £54,000, or 7s. 2½d. per ton, which was a very large amount to expect to obtain from a ton of coal on top of all other costs merely by converting it into other forms of heat-producing materials of no greater calorific value than the original. Furthermore, several hypothetical profit and loss accounts he had seen compiled for the information of prospective investors were based on present prices of fine slacks, and no account had been taken of the inevitable rise which must take place in the market price of these small coals when many low-temperature plants of large size were operating in the country. Mr. Pope said that there was no greater optimist than he as to the ultimate commercial success of low-temperature carbonisation, but it was no use living in a fool's paradise.

Mr. R. MacLaurin (Great Britain) commenting on Mr. Pope's remarks, said that the MacLaurin plant was simply an elongated producer, and depreciation charges were very much lower than those of any existing type of producer; as the process had been working for half a century he saw no reason for imagining that it was necessary to write down very heavy depreciation costs for a producer that was working under more favourable conditions.

Colonel W. A. Bristow, speaking of the Coalite process, with which he was associated, said that as the result of the work carried out during the past 22 years, and particularly in the last year or two, during which 160 full-scale retorts had been in continuous operation, he had indisputable evidence that the process had arrived at a stage at which technical difficulties had been removed and commercial success assured. Each week, 1,750 tons of coal was being carbonised. The present Parker retort was capable of distilling continuously a wide range of washed coals, coking or non-coking, and could always be discharged without difficulty. The cost of upkeep and renewal had been negligible, and not one single retort out of the 160—most of which had been in operation for over a year—had had to be put out of action.

Dr. Thole emphasised the statement in the paper by Dr. Lander and Dr. Sinnatt, that if low-temperature processes were to show a reasonable profit, not only the solid product, but the tar and gas must all be utilised to the full, and profitably. There appeared little doubt that the gas was of excellent quality. The value of the solid fuel depended on the raw material; some grades of solid fuel were practically valueless; others had a very high market value. As to the liquid products, the aqueous portion contained practically no ammonia and was more a liability than an asset.

In regard to the non-aqueous portion, there was a serious need for a new name. Most prospectuses had referred to it as oil, but it was certainly not oil in the ordinarily understood sense of the word. It was referred to nowadays as tar; it was more like tar than oil, but differed in a great many properties, particularly as regards value, from high temperature coal tar. It contained 25 per cent. of a pitch which was very definitely inferior in many qualities to the pitch from high-temperature tar. It contained a spirit—and further spirit could be stripped from the gas—which could be looked upon as a definite asset. It was of very good quality, although it needed more refining. With regard to the large bulk of products lying between the spirit and the pitch there was a serious problem, and he urged that the liquid products had by no means the value which was sometimes attributed to them.

I.C.I. at the Motor Show

At the Motor Show, to be held at Olympia, London, in the period October 11-20, Rexine, Ltd., a subsidiary of I.C.I., will exhibit their well-known leathercloths and rubbercloths. Another interesting exhibit, also by an associated company of I.C.I., is that of Nobel Chemical Finishes, Ltd., who are showing Belco. The manufacturers state that since the introduction of Belco to the home market just about two years ago, rapid strides have been made, with the result that the principal motor manufacturers and motor body builders have adopted Belco as their standard finish. The exhibit will include model cars showing various colour effects, metal panels finished with Belco and also specimens of Belco finish showing its suitability for use on fabric bodies and special finish for all woodwork on a car body.

By-Product Ammonia Recovery

Discussion on Mr. Parrish's Paper

Mr. P. Parrish's paper on "Some Technical and Economic Aspects of the By-Product Ammonia Recovery Problem," which was contributed to the London Fuel Conference on Thursday, September 27, was published in these columns last week. In the subsequent discussion, Mr. L. H. Sensicle said that Mr. Parrish appeared to be very doubtful as to the possibilities of adopting the method of direct recovery of ammonia at gasworks because, when referring to the adoption of such processes at coke ovens, he had expressed the view that there was no such thing as a direct process of sulphate of ammonia manufacture, and had stated that, while it was true that coke-oven recovery plants were said to operate the direct process, the last-named was more imaginary than real.

Mr. Parrish had mentioned factors which he had considered were likely to militate against the effectiveness of the direct process. He had suggested, for instance, that the saturator and the mains leading from it might suffer from corrosion by hydrochloric acid, due to the dissociation of ammonium chloride. In practice, however, plants had worked for a period of years without any noticeable corrosion of the saturator resulting from the dissociation of ammonium chloride, for the reason that the chloride did not get through to the saturator. It was removed by the spray of liquor in the tar extractor.

Tar in the Direct Process

Again, it was difficult to understand how Mr. Parrish had come to the conclusion that satisfactory tar was not obtainable by the direct process, because the recovery of ammonia did not remove anything from the carbonising products which normally went into the tar. The whole point about tar recovery in direct processes was that the heavy tar came down first—it was really a process of fractional condensation—and the lighter constituents (containing much naphthalene, light oils and tar acids) passed on in the gas stream and were condensed out on cooling. Far from being a disadvantage, it was really an advantage, and had been adopted for a special purpose in a certain plant, i.e., the purpose of road tar manufacture without distillation.

A further objection made to the direct process by Mr. Parrish was with regard to the devil water condensed after the saturator. There was an aqueous condensate, naturally, and it contained a high proportion of tar acids, amounting to from 400 to 600 parts per 100,000, but the remarkable thing about this effluent was that over 90 per cent. of the oxygen absorption was due to tar acids. This was a point of great importance in connection with the pollution of rivers and the possibility of rendering the effluents innocuous, because, seeing that the chief constituents causing trouble were in this case tar acids, it was possible to treat the effluent with a benzol washing process and remove those constituents. In the indirect process only half the oxygen absorption was due to tar acids, and the remainder to thiosulphates, thiocyanates and other bodies, which could not be removed in the manner indicated; they must be treated by bacterial methods, which were very costly to operate.

The semi-direct process had been referred to as better than the direct process. It had been in greater use than the direct process, because of the difficulties at the outset with the latter, but recently those difficulties had been overcome, and processes were working satisfactorily and without interruption. There were many plants in the north of England and the Midlands which had worked very satisfactorily for a number of years.

Mr. Kilburn Scott urged that more attention should be given to the production of synthetic ammonia from the hydrogen in coke oven gas.

Mr. P. Parrish, in reply, referring to Mr. Kilburn Scott's suggestion, asked why he had not directed attention to the utilisation of the ammonia which was already available, and at a price of only £3 18s. a ton. That was the problem which the by-product industry, both coke ovens and gas works, had to solve, and it was capable of solution. The point was that it had not been attacked, and could not be attacked except in mass. If we were to realise for by-product ammonia what it really merited, it was necessary to centralise works and develop mass production.

The Transatlantic Tour in Retrospect

By Our Special Correspondent

In what follows, our special correspondent, who accompanied the chemical engineers and chemists on their tour of Canada and the United States, sums up his impressions. Previous articles appeared on August 18, September 1, 8, 15, 22, and 29.

THE British chemical visitation to Canada and the United States is now receding into the distance, and it is possible to estimate its main features and results more easily than while the tour was in progress. Was it, to begin with, worth while—worth all the labour, expense, time, and exertion involved in its organisation? I can imagine any American member replying with emphasis, "Yes—sir! Sure thing!" And every British member would as emphatically endorse his judgment. To the most seasoned traveller it was a delightful trip, with many new personal experiences; to the junior members of the party, visiting Canada and the United States for the first time, and having also their first taste of Transatlantic travel, it was a piece of good fortune to have so large and varied an experience so early in life. It may safely be said that no single member returned home without having greatly benefited from, as well as greatly enjoyed, the trip.

The organisation of the tour was as nearly perfect as anything could be. What defects there were—and these were merely incidental—were entirely on the British and not on the American side. The initial mistake was that the party was much too big. Its size not only greatly increased the expense and responsibility, but made any real degree of intimacy and social intercourse—especially during the train cruise—almost impossible. It was so large that even at the end of three weeks many were still strangers to one another. The visits to works became organised processions instead of intimate personal inspections. One result was that at an early stage it developed into a jolly holiday tour rather than a serious industrial mission. We had convincing evidence of this at Pittsburgh where, after lunch, with almost one accord, the whole party went off, some to a baseball match, and others to neighbouring swimming baths. The cost to our American hosts must have been heavy, and though they met the obligation in the handsomest spirit, one could not occasionally avoid the feeling that we were trespassing on their good nature.

A second matter for regret was that the British party was not more representative. We were constantly meeting some of the biggest figures, academic and industrial, of American chemical industry, and there were not many corresponding figures on our side. The Americans could not have failed to notice the junior composition of the party, but like perfect hosts they never betrayed the least consciousness of the fact, and their welcome impartially comprehended us all. In this respect their action was in contrast with that of the heads of the British party. Since so many young people had been brought out, it was the obvious duty of those responsible to look after them and make them all feel they belonged to one family. As a matter of fact there was virtually no leadership of this kind at all; the official party looked after themselves and left everybody else to do the same. This was noticed in the course of the first few days; long before the close of the tour it was a matter of general comment. After all, perhaps, it did not greatly matter. The members took matters into their own hands and introduced themselves with very happy results. I saw quite a lot of the younger members of the party, and found them very good company, as the American people also did as soon as they had an opportunity of knowing them.

PLACING A WREATH ON THE UNKNOWN SOLDIER'S TOMB IN ARLINGTON CEMETERY, WASHINGTON. THE THREE FIGURES IN THE FOREGROUND ARE PROFESSOR THORPE, MR. F. H. CARR, AND SIR ALEXANDER GIBB.

Two other points may just be mentioned. There were many occasions on which one would have liked to hear the spirit of such an international visit expressed in imaginative and dignified terms. The speaking, on the whole, was poor.

If these were the slight defects on the British side, they were more than made up for by the excellence and generosity of the American organisation. All the way from Quebec to Washington, Dr. Weidlein and Dr. Parmelee were incessant in their attention to the comfort of their guests. The liaison between the central organisers and the various local committees was perfect. Everything that could have been foreseen had been foreseen and provided for; nothing went wrong and everything went right. It was a wonderful piece of organisation, and at Washington, at the final dinner at the Cosmos Club, the party did not fail to express their appreciation of it.

At New York the situation was simpler, for the members were settled together for a week at the Commodore Hotel and the Chemists' Club. The local committee made everyone feel at home, and it would be difficult to say who were the sorrier when the visit ended—the entertainers or the entertained.

Looking back on the itinerary, one notes that the number of chemical works visited was not large. We saw some very large samples of glass works, paper mills, power stations, rubber works, artificial silk factories, etc., as well as the du Pont dyeworks at Wilmington, and a carbide plant at Shawinigan Falls. These were quite sufficient to give a very fair idea of large scale American lay-out, method, and management, the basic principle of which seems to be to combine the whole process of manufacture, from raw material to finished product for the market, under one roof. In the organised parties there was not much opportunity for inspection of technical details, but where smaller parties made private arrangements for works visits, their inquiries were met in the friendliest way, and altogether there was a considerable exchange of opinion and experience. Nearly everyone, however, agreed that the main value of the trip lay in its personal contacts, and in the acquaintances established between people familiar to one another by name, but otherwise strangers. This aspect was much appreciated on both sides.

The whole party were obviously impressed with the large scale of American industry and the energy with which, from members of executives down to manual workers, it is prosecuted. Some remarked especially on the comparative youth of the men in charge of departments, and their confidence and initiative. There is apparently in the States more scope in this respect, for the reason that men aim at making good at an earlier age than here, and consequently leave more openings to juniors behind them. The rewards open to energetic and ambitious youth seem bigger and more accessible. Probably the real difference between British and American personnel arises from a difference of conditions. It must be remembered that, as visitors, we were seeing the best that America possesses in men and in organisation, just as they, visiting this country, would be shown the best on our side. Is there any marked distinction between the best on both sides? It is doubtful; the main distinction is one of scale and opportunity. One thing was very obvious. Whatever differences there may be on the surface, America is no foreign country to an Englishman. In all essentials, the two peoples are one. Canada is still less a foreign land, in spite of the persistence of the French tradition in and around Quebec. It resembles the United States in its vastness and in the richness of its natural resources, but it remains intensely British in sympathies, and on every hand one found a desire for a stronger British interest in its great developments.

Among the pleasantest recollections of the tour will be the personal memories of the many friends whose kindness and hospitality we experienced. On the outward passage one found a most companionable and well-informed fellow traveller in Professor Bartow of Iowa, who, with Mrs. Bartow and their daughter Dr. Virginia Bartow, remained until the end of the Swampscott meetings. Another boat companion was Dr. R. B. Moore, late of the Bureau of Mines, who, with Mrs. Moore, joined the party at various points and who gave us an insight into many domestic American problems, particularly immigration. Dr. C. H. Reese, of Wilmington, was already known to many, and Mrs. Reese and himself played a large part in making our welcome so complete. Of Mr. H. M. Dow and his family much the same may be said. Professor A. H. and Mrs. White (Michigan) were prominent figures on the tour and at the social functions; and Dr. D. D. Jackson (Columbia) and Mrs. Jackson also made many friends. The former attained some celebrity by missing his train after the Cobalt festivities, and appearing for the whole of the next day in his evening clothes—carrying the situation off with as much dignity as was possible. Dr. Esselen, on the tour and at Swampscott, was a most friendly and helpful adviser, and was well supported by Mrs. Esselen.

At New York we fell instantly into a perfect nest of friends. Dr. L. H. Baekerland exhibited great interest in the welfare of the party, and Mrs. Baekerland joined heartily in the social work as honorary chairman of the ladies' section It was pleasant to meet again Mr Dorr, the head of the well-known Dorr Co., kindly and courteous as ever; he told me some interesting things about important European developments of his company. Mr. L. V. Redman's speech of welcome I have already mentioned as quite a little classic in its way; Mrs. Redman and her daughter were no less successful in their social activities. Professor Bogart will be remembered as the most vivacious of toast-masters; he made the New York banquet the brightest event of the kind on the tour. The visit to Longwood, and the gracious welcome by Mr. Pierre du Pont and his lady, will be to all a pleasant memory. Dr. Charles Herty I found as alert and energetic as ever, and I was glad to note his plea at the A.C.S. Council meeting for sound, disinterested chemical Press publicity. The breezy welcome of Dr. Howe at Washington made us instantly happy; from arrival to departure he looked after everybody like a father. At New York Dr. J. W. H. Randall and Mrs. Randall were among the hardest workers for our entertainment, and his specially prepared "c.p." production was considered quite satisfactory. What a pair he and our missing friend Talbot would have made!

Of the many other notable people we met, two stand out in our memories—Dr. Millikan, whose striking Messel Lecture proclaimed him in the first rank of American scientific thinkers, and Dr. Arthur D. Little, the new president of the Society of Chemical Industry, whose speeches had a rare literary flavour. When he comes to Manchester next year, one may safely predict a warm welcome to a typical New Englander, and a presidential address that in style and matter will be worth hearing.

While our own party was not rich in figureheads, the three presidents kept their ends up very well. Professor Thorpe was already well-known both personally and by repute in America, and Mrs. Thorpe everywhere proved most cheerful company. It was singular that not until almost the last stage of a three week's programme was Professor Thorpe asked to speak; his delightful response at the New York banquet showed how much of gaiety we had lost by the oversight. Sir Alexander Gibb was as happy and popular as any schoolboy; perhaps his most trying experience was being compelled to write down for a crowd of admiring young ladies, on their memento cards, a list of his numerous titles and decorations. Mr. Carr supported the presidential traditions of the Society with his usual quiet dignity, and his two contributions were recognised as those of a cultured and practical scientist. Mrs. Carr and her daughters worthily maintained their position on the social side. F.E.H.

Report of the Government Chemist

Steady Increase in Work of Laboratory

The Report of the Government Chemist upon the work of the Government Laboratory for the year ending March 31, 1928, has just been published (H.M. Stationery Office, pp. 45, 1s. 6d.). Notes from the report are published below.

THE total number of samples examined by the Government Laboratory in the course of the year (states the Government Chemist), including those dealt with at the chemical stations, was 491,039 as compared with 469,642 in the preceding year, an increase of 21,397. Both the laboratories in London have examined an increased number of samples, the increase at Clement's Inn being 31,234 and at the Custom House branch 8,735, or a total increase at headquarters of 39,969. On the other hand there has been a decrease at the chemical stations of 18,572, due to a reduction in the number of samples of wine. The samples of tea which, in the two previous years have steadily decreased in number, show an increase of over 6,000, and there is a notable increase in the number of samples of sugar and sugar products examined during the year. In the case of British sugar, the number was 5,615 compared with 3,994 in 1927, 1,590 in 1926, and 450 in 1925. There has been a remarkable increase in the number of samples of tobacco exported on drawback from 17,049 in 1927 to 44,365 in 1928. The number of samples under this head in 1923 was 8,533, hence the number last year was approximately two and a half times that of the previous year, or five times that of 1923.

Water and Pollution of Rivers

Fifty-three samples of river water, muds and effluents were examined. This work is carried out to ascertain the conditions of fishing streams from the point of view of fish life and the effect of certain types of pollution on fish and fish food. In connection with the question of pollution of fishing streams by road drainage, twelve samples of proprietary road dressings and extracts from such dressings were examined for harmful or toxic bodies. The services of members of the staff were utilised in the survey of several rivers. The work in connection with the systematic survey of a river receiving effluent from a beet sugar factory has been continued and the phenomena of the diurnal variations of the dissolved oxygen and the ammoniacal nitrogen have formed the subjects of two communications to the Biochemical Journal.

Arsenic in Fish

Four samples of herring from North Sea fishery grounds were examined to see whether they normally contained proportions of arsenic comparable with the amount found to be naturally present in other fish, notably plaice. All four samples contained traces of arsenic amounting to about two parts by weight of arsenic per million parts by weight of fish. This quantity is somewhat less than that found in plaice. Two samples of sea-water were also tested for arsenic. In both cases minute quantities were present.

A sheep's jawbone containing some teeth with a metallic lustre, which had been received from a lead mining district in Scotland was submitted with enquiry as to the nature of the metallic lustre, popularly believed to be a deposit of gold. Analysis showed the presence of traces of lead, but gold was absent. The metallic sheen appeared to be due to the effect of light upon a laminated crystalline structure mainly calcium phosphate.

At the request of the Ministry of Agriculture, an investigation has been made into various commercial processes used in the preservation of eggs, with the view of devising means of distinguishing untreated eggs from eggs which have been preserved. A report has been made giving a description of a method which enables this to be done. A further investigation relating to the selection of a suitable ink for marking eggs is at present in progress.

Safeguarding of Industries Act

This Act came into operation on October 1, 1921, and from that date a very large number of samples, amounting to about 10,000 a year, have been examined at the laboratory as to the liability of the goods to Key Industry Duty. During the past year, 11,574 samples were examined, in addition to 10 samples which were examined both for dyes and liability to Key Industry Duty. One hundred and eighty-eight of the samples were examined in connexion with claims for repayment of duties on exportation. Two samples of cutlery and three samples of fibre were examined to ascertain whether they were liable to duty.

Silk and Artificial Silk

The duties on silk and artificial slik came into force on July 1, 1925 (Finance Act, 1925). They have entailed the examination of a large number of samples. Some of these were imported articles or fabrics or yarns concerning which it was desired to know whether real or artificial silk was present, and if so, the proportions. In addition, in the case of silk, information was sought as to whether the natural gum had been removed from the fibre, since undischarged silk pays a lower rate of duty.

Other samples consisted of materials which were being exported and in these cases it was desired to check the declarations of exporters who were making claims for repayment of duty based on the proportions of silk and/or artificial silk in the goods. Examination was also made of a number of samples of artificial silk yarns from home factories. In many cases it has been found necessary to make a detailed examination in order to obtain precise information as to the nature of the goods. The total number of samples examined in connection with the silk duties was 20,915, of which 10,810 were from imports, 9,318 from exports, and 787 from home factories.

Preservatives Regulations

The main provisions of the Public Health (Preservatives, etc., in Food) Regulations, came into force in England and Wales and Scotland on January 1, 1927, and in Northern Ireland on July 1, 1927. Their application to bacon, ham and egg yolk was deferred until July 1, 1927, and to butter and cream and pearl barley until January 1, 1928, with certain other modifications of date respecting prepared foods. The regulations which have been promulgated in similar terms for the most part by the Ministry of Health, by the Scottish Board of Health, and by the Ministry of Home Affairs for Northern Ireland, prohibit the sale of articles of food containing preservatives, except in the case of a few foods and beverages in which certain preservatives are allowed to a limited extent, under conditions, in some cases, as to marking. They also prohibit the sale of food containing certain colouring matters and the sale of cream which contains any thickening substance. The Regulations further do not allow the import of articles of food which contravene these requirements.

During the year, 1,462 samples of imported dairy produce and 1,671 other food samples were examined, including 133 from Scotland and 29 from Northern Ireland. Seventy of the samples were reported to the Board of Customs and Excise as contravening the Regulations. These included 44 samples containing sulphur dioxide and nine containing benzoic acid, either contrary to the Regulations or in excess of the quantities permitted. Thirteen samples of tinned vegetables contained copper colouring matter, the use of which is prohibited by the Regulations, and hydrogen peroxide was found in one sample. Three samples of butter imported since January 1 contained boron preservative.

In the report for last year it was noted that boric acid, which was commonly used as a preservative for margarine in the period before the Regulations took effect, disappeared from these samples after the Regulations came into force. A similar result has taken place with respect to butter.

Home Office

Forty-four samples were submitted by the Police authorities in connection with proposed proceedings in the courts. The samples included alcoholic liquors on sale during prohibited hours, foods and medicines suspected to contain poison, corrosive fluids and suspicious marks, and samples containing, or suspected to contain, one of the drugs specified in the Dangerous Drugs Act. Four samples of yellow metal, alleged to be gold, consisted of brass. Seven samples were submitted by the Home Office in connection with special inquiries. An investigation was made of the alkaloids in some samples of

prepared smoking opium, obtained by the courtesy of the Commissioner of Police, with a view of devising a method which would readily distinguish smoking opium from raw opium or opium extract.

Sale of Food and Drugs Acts

When proceedings are taken under the Sale of Food and Drugs Acts, the Justices before whom the case is heard must, on the request of either of the parties to the case, and may, if they think fit, without any such request, send to the Government Laboratory for analysis the portion of the sample which has been retained for that purpose. Twenty-six samples of food were examined during the year. In 17 cases the results were in agreement, in three cases in disagreement, with those put forward by the prosecution. The information given by the Court in connection with five samples was not sufficient to enable a statement as to agreement or disagreement to be made.

In the remaining case, it appears probable that inefficient mixing was the cause of varying results. The public analyst for the prosecution found 2.07 per cent. of fat in his portion of the sample, while the reserved portion sent to the Government Laboratory contained 1.50 per cent. of fat. This result, although it confirmed the charge of deficiency, indicated imperfect mixing; a suspicion which was confirmed when it was known that the defendant's portion contained 6.68 per cent. of fat. The figures point to the necessity for exceptional care in the sampling of milk supplied in the modern form of bottle which lends itself to the formation of a layer of cream, and, by the absence of air space above the milk, renders difficult the mixing of the cream layer with the remainder of the milk.

The following were the cases in which there was disagreement. A sample of milk which had been taken in connection with an appeal and was alleged to show no deficiency in fat was found to contain 2.73 per cent. of fat. A sample of milk alleged to contain in each gallon 8 grains of sediment, mainly derived from farmyard debris, contained one-half grain of the sediment per gallon, and only a small proportion of the sediment was derived from farmyard debris. In another milk, alleged to contain added water, the amount of non-fatty solids was 8.51 per cent., the milk therefore being within the requirements of the Regulations.

Ultra-Violet Light Transmission of Glass

At the meeting of the Society of Glass Technology held in Bournemouth on Friday, September 21, a paper entitled "A Study of the Ultra-Violet Light Transmission of Glass" was presented by D. Starkie and Professor W. E. S. Turner. Photographs of the light transmitted by seven commercial ultra-violet glasses were obtained. They were Corex, Vita-, Senslux, Holvi-, Helio-, Quartz-Lite, and Uviol glasses. The percentage transmission at each point of the spectrum for these seven glasses was also determined. Transmission curves extending from a wave-length of 7000 A° to 8000 A° were shown, and a table showing the percentage of the solar ultra-violet rays cut off by ordinary glass transmitted by each glass. The fact that the transmission was roughly proportional to the iron content was pointed out. The amount of ferrous iron was roughly 30 per cent. of the total iron. Experiments on solarisation were described. Six glasses were exposed, under the conditions that an ordinary window pane was subject to, for three months. The decrease in transmission of the solar ultra-violet rays was measured. Four specially prepared laboratory glasses, containing only iron and platinum as impurities, showed no change in transmission when exposed to the sun's rays or to those from an artificial source of ultra-violet light. The second part of the paper described the results of measurements of transmission of a series of specially prepared soda-lime glasses. The parent glass was 75 per cent. SiO_2, 10 per cent. CaO, and 15 per cent. Na_2O, and ferric oxide was added in increasing amounts as the series progressed. The glasses were prepared in platinum in an electric furnace. The platinum content, which had a marked effect on the transmission, was reduced, as far as possible, by sintering. As the iron content increased, the limit of transmission in the ultra-violet moved progressively towards higher wave-lengths. Plotting iron content against wave-length limit yielded a smooth curve, from which it could be deduced that a glass perfectly free from iron and platinum would have a limit of 2200 A° approximately.

Road Surfacing Materials

First Meeting of London Section of S.C.I.

A joint meeting of the London Section and Chemical Engineering Group of the Society of Chemical Industry was held on Monday, at the Society of Arts, when Mr. W. J. A. Butterfield, chairman of the London Section, read a paper on "Road Surfacing Materials." Col. H. T. Tudsbery, M.C., M.Inst.C.E., Director of Engineering to the Roads Department, of the Ministry of Transport, was in the chair.

Mr. Butterfield referred to the bicycle as the forerunner of the motor-car in applying solid rubber and pneumatic tyres, and "driven" as distinct from hauled wheels. He discussed the effect on road surfaces of these changes in tyres and manner of propulsion and the consequent transition from water-bound macadam to tarred and other bituminous-surfaced roads. The definitions of bitumen and asphalt recently adopted internationally were quoted, and the alterations caused thereby in current British nomenclature were indicated in a diagram. The advances in the preparation of road tars, from the early days when crude gas-tar was used, to the control by specifications which now prevails, were referred to, and the value of testings of consistency was emphasised. The new standard viscometer adopted by the British Road Tar Association was described, and results of testings with it of a large number of tars in comparison with the Hutchinson consistency test were given.

Effects of Tar Products on Fish

A long account was given of the nature of the contamination of rain washings from bituminous surfacings, and the results of a large number of experiments by the author on the toxicity to fish of solutions of tar products were shown in tabular form. Trials, each extending over six months and made by different observers, of the effect of washings from roads under traffic conditions, were described. The bearing of the results of these practical trials on the use of tar and other bituminous materials in proximity to fishing steams was discussed. The author criticised severely the inaction of the Ministry of Agriculture and Fisheries in regard to biological reports presented to it more than six years ago by Mr. A. J. Mason-Jones, M.Sc., the publication of which had been called for in Parliament and the Press on many occasions.

The increasing use of cold spray emulsions of tar and asphaltic bitumen, and the nature of such preparations, were noticed.

Discussion

Dr. P. E. Spielmann, referring to a meeting of a Committee of the International Road Congress held in Paris last year, where it was decided to adopt the American definition of bitumen, said he found himself, as representing this country, in a minority of one in disapproving of the proposal, and preferred to have the matter thrashed out at home before agreeing. In the end they had adopted the proposal for the sake of international harmony, and although this demanded certain sacrifices on our part, it also involved considerable sacrifice on the part of the French. The agreement to adopt the American definition was taken quite quietly by the asphaltic bitumen interests and was received with quite decorous enthusiasm by the tar people. The only trouble was that what the Americans called bitumen was within a yard of what we called asphaltic bitumen. Therefore, although perhaps we had not got the best definition, we had the second best, and at any rate the nations understood what each other meant very much better than they did before. He urged the Ministry of Transport to approach the road development problem as a purely physico-chemical matter, and suggested that if one per cent. of the Road Fund could be allocated for scientific research upon this problem we should quickly make progress in the desired directions.

Occupation of I.C.I. Building

The first section of the staff of Imperial Chemical Industries, Ltd., to go into the new headquarters at Millbank, was the intelligent division, which went into occupation on Monday. Three-fifths of the interior of the building is now finished, and the work will be completed in December. The windows are glazed with 30,000 square ft. of Vitaglass, and two and a half miles of corridor rubber flooring has been made for the building by Macinlop, Ltd., to the design of Sir Frank Baines.

Report of the Fuel Research Board

Steady Progress of the Work on Low-Temperature Carbonisation

The Department of Scientific and Industrial Research has just issued the "Report of the Fuel Research Board for the Period Ended March 31, 1928, With Report of the Director of Fuel Research" (H.M. Stationery Office, pp. 70, 1s. 3d.) Extracts from the report appear below.

THE period under review (states Dr. C. H. Lander, Director of Fuel Research) was one of steady progress, and of recovery from the effects of the long coal stoppage which had so seriously delayed both the large scale work at the Fuel Research Station and the orderly growth of the organisation for the Physical and Chemical Survey of the National Coal Resources.

Any observation on the behaviour of that extremely complex substance known as coal may have a bearing on widely different processes for its utilisation. For example, the investigations into the Bergius process, which were primarily undertaken to test the possibilities of obtaining, by this method, a supply of liquid fuel from home sources, involve a study of the action of hydrogen on coal which is throwing light both on the constitution of coal and on the constituents which provide the coking properties.

Low-Temperature Carbonisation

Slow, but steady progress was made during the year 1927 towards the accumulation of the data necessary for determining to what extent, and under what conditions, low-temperature carbonisation of coal will be a commercial success. As mentioned in the Report of the Fuel Research Board for 1926, and announced in the House of Commons on May 11, 1927, the Gas Light and Coke Co. were asked by the Government to examine all existing low-temperature carbonisation plants, and consider whether they were prepared to try out that process which appeared to them the most promising for working in conjunction with a London gas works. The company selected for the purpose the process developed at the Fuel Research Station, and decided to erect a bank of retorts similar to those referred to in previous reports as the "E" retorts, and which were described and illustrated in the report of the Director of Fuel Research for 1926 and in Technical Paper No. 17.

Private Work

Progress has also been made by private firms and individuals interested in low-temperature carbonisation. The new plant of Low Temperature Carbonisation, Ltd., at Barnsley, started work in July, 1927, and has a capacity of about 1,000 tons of coke a week. The director has visited the plant, which is generally similar to that tested by his staff in 1924. The report of the test indicated points where modification in design was desirable, and these suggestions have been acted on in erecting the new plant. The advice of the British Cast Iron Research Association was sought by the makers of these retorts as to the metal mixture and analysis to be used. A metal of similar analysis to that recommended is being adopted at the Richmond Gas Works by the Gas Light and Coke Co., and at the Fuel Research Station for the new retorts.

The Maclaurin plant installed at the Dalmarnock Gas Works of the Glasgow Corporation has a capacity of about 100 tons of coal a day, and has now been running for over two years. An official test has been made on it at the Fuel Research Station.

There are at least four plants of other types in existence, with a designed capacity of about 100 tons of coal a day, and several more are stated to be under erection, while there are yet others working on a scale of about 10 tons a day.

Retorts for Low-Temperature Carbonisation

The "E" retorts at the Fuel Research Station had completed 12 months under heat by the end of 1926, and were then cooled down for inspection. It was found that the retorts had distorted slightly in such a way as to make the cross section near the base of the retorts rather larger than the outlet at the bottom, but otherwise they were in excellent condition.

The retorts were again put to work at the end of January, 1927, after some minor alterations had been made, and they remained at work till the end of 1927. The total coal carbonised during 1927 in the two retorts was 1,475 tons, and a variety of coals was used. The distortion of the retorts, causing a "bottle neck" at the base, caused difficulties in discharging the coke when a swelling coal was used. Towards the end of the year, increased difficulty was found in discharging the coke from the retorts when using any but a weakly caking coal. It was found that increased distortion was causing the joints in the retorts to open and the consequent leakage made close temperature regulation impossible. Finally, it was necessary to stop carbonising in January, 1928, after two years' working. It was found that the joints of one of the retorts had opened, causing a very serious leak.

New Design of Retort

Apart from the distortion causing a reverse taper at the bottom of the retorts, and finally causing leaky joints, the retorts were in excellent condition. The retorts were cast in three sections, vertically, and each section consisted of two pieces bolted together down the ends. The new retorts consist of four sections vertically, each section being built up of two flat sides with a curved connecting piece bolted on to form each end. It is hoped this will diminish the tendency for the joints to open. The bottom section is being given an increased taper, and the attachment to the bottom casting is being made in such a way that the bottom section will not be rigidly held. It is hoped that if these retorts bulge they will do so without introducing a reverse taper. If these expectations are fulfilled, the retorts should have a reasonably long life and work easily with practically any type of coal. The new retorts both at the Fuel Research Station, and those erected at Richmond by the Gas Light and Coke Co. will be of a special metal which, it is hoped, will be less liable to distortion at the working temperatures.

Two new retorts, as described above, but to alternative designs in detail, were ordered early in 1927, to replace the old "D" retorts. These have been delivered, and started carbonising in April.

Study of "Low Temperature" Tar and Spirit

The study of low temperature tar has proceeded both at the Fuel Research Station, and at the Chemical Research Laboratory at Teddington, the tars used being those produced in the externally heated retorts at the Fuel Research Station. The investigations at the Chemical Research Laboratory are directed towards the study of the actual constituents of the tar, and as distillation methods of separation always result in decomposition or combination of the constituents, with the formation of pitch, solvent methods have been developed. A number of potentially useful constituents have been isolated. Some of the results obtained have been published in a paper read by the Director of Chemical Research at the conference of the Society of Chemical Industry in May, 1928. At the Fuel Research Station, the examination of the tars produced at different temperatures in the small scale horizontal steel retorts has been continued. The results so far obtained indicate that, in the main, the tars produced by the carbonisation of coals representative of the bituminous class do not differ widely in their characteristics, and although the proportions of the constituents vary from one tar to another, the same classes of constituents appear to be present in each tar.

Hydrogenation of Coal

The intermediate-scale Bergius plant at the Fuel Research Station, mentioned in the last report, has been working since February, 1927, and much experience has been gained. This plant is of the continuously-working type, and has a capacity of about 1 ton of coal a day. The difficulties which are inevitable in starting an experimental plant of this nature have been overcome, and the staff now has the knowledge and experience necessary to work the plant. The amount of oil obtainable from a ton of coal by this method is some six or more times that obtainable by carbonisation methods. The cost of the process cannot be known until it has been tried out on a far larger scale than is the case at present, but with our present knowledge, it is safe to assume that the cost would

be considerably greater than the price at present ruling for imported oils, although it should be less than the prices of imported oils which ruled in 1917–18.

There are several directions in which improvements, to reduce the cost of working, may be expected, notably in the cost of hydrogen production, or in the recovery and re-use of the hydrogen in the gaseous products of the process.

Work of Imperial Chemical Industries

The option on the rights in the process for the British Empire, given by the various agreements between the Department, the British Bergius Syndicate, and the International Bergin Co., continues until a full-size plant has been erected and worked for six months under conditions giving the Syndicate and the Government full information as to the working, and facilities for inspection. In the meantime, Imperial Chemical Industries, Ltd., have obtained a controlling interest in the syndicate, and are experimenting at their own works. There is no doubt (says Dr. Lander) that this firm is in an exceptionally favourable position for developing the process. It is essential from a commercial point of view that all the products of the process should be utilised to the best advantage, and it seems quite possible that the most economical way of getting the necessary hydrogen and utilising the gas produced by the process, is to combine the plant with coke-oven plant and with the manufacture of synthetic ammonia, and possibly with low temperature carbonisation plant.

In view of the action of Imperial Chemical Industries, Ltd., the work at the Fuel Research Station is not directed towards examining the immediate commercial possibilities of the hydrogenation of coal, but rather consists of a close study of the chemical reactions involved in the process, in view of their fundamental importance. The investigations are being carried out partly with the above-mentioned plant, and partly in the small scale intermittently working bombs, and may prove of importance in other directions, as the results obtained throw some light on the constitution of coal, and on the factors which determine its caking properties.

Effect of Hydrogenation on Caking Properties

It has been found that with every coal tested, even anthracite, hydrogen is absorbed under suitable conditions of temperature and pressure, and that this results in a definite increase in its caking power. For example, a particular coal which, if carbonised in its natural conditions, produces a solid residue with no adhesion between its original particles, was treated in the Bergius apparatus in a less extreme way than is necessary for liquefaction, and yielded a product which proved to be more strongly caking than any known coal. On carbonisation it yielded an excellent coke, even when mixed with two or three times its weight of raw non-caking coal. The tar yields were also increased.

It has long been known that the caking properties of a coal could be reduced or destroyed by slight oxidation, but it has not previously been possible to increase them, or replace them when once destroyed. Detailed results of this work will be published in due course.

The work in Dr. Bergius' works at Mannheim-Rheinau, which was being carried out by a joint committee of the parties to the agreement referred to above, was discontinued at the end of May, 1927, by mutual agreement.

Appointments Vacant

GENERAL SECRETARY for the Society of Chemical Industry.—Further details will be found in our advertisement columns, p. xxiv.

ASSISTANT CHEMIST for the Bradford Road Gas Works of the Manchester Corporation Gas Department.—Further details will be found in our advertisement columns, p. xxiv.

RESEARCH CHEMIST in the Department of Coal Gas and Fuel Industries of Leeds University.—The Registrar, The University, Leeds. October 31.

ASSISTANT LECTURER IN AGRICULTURAL CHEMISTRY in the Edinburgh and East of Scotland College of Agriculture.—The Secretary, 13, George Square, Edinburgh. October 15.

LABORATORY ASSISTANT in the Food Canning Section of the Low Temperature Research Station, Cambridge.—The Secretary, Department of Scientific and Industrial Research, 6, Old Queen Street, London, S.W.1. October 15.

Cotton Research Association

New Artificial Silk Department

MR. KENNETH LEE, president of the British Cotton Industry Research Association, reviewing the work of the association at the ninth annual meeting held at the headquarters, the Shirley Institute, Didsbury, on Thursday, September 27, said the work going on was becoming of increasing importance to the cotton trade, and the Shirley Institute was also becoming an adviser to the trade. During the last 12 months no fewer than 250 special problems had been undertaken at the request of member firms, in addition to the main researches.

During the year closer contact between the institute and the trade had been enormously increased by an altered policy in regard to publications. A deep impression was created by the issue of the Five Years' Progress Report, which many members found to be the first of the institute's publications that they could read through and understand from cover to cover. Another step that had forged a further link with the mills was the issue, about every six weeks, of the *Shirley Institute Bulletin*, giving items from the laboratories of day to day use. In addition, there were now circulated technical abstracts of the regular memoirs of the scientific researches of the institute, written in a style which enabled the members to grasp easily the aim and results of the work.

Sufficient money had been contributed during the year to justify the inauguration of the new artificial silk research department, for which new buildings had been erected and were being equipped at a cost of £5,600. Financial assistance was promised by the Department of Scientific and Industrial Research, and it was hoped to raise the income of the new department to the £8,000 which the directors considered could be usefully spent. Dr. H. Hunter, a well-known physical chemist with experience of chemical engineering, had been appointed head of the new department, and he would have a staff of eight assistants. The department would be supervised by a special committee representative of all sections of the cotton industry, and this committee was now engaged in drawing up a scheme of artificial silk research.

The total staff of the Institute now numbered 95, of whom 41 were graduates. A closer alliance between science and technology was needed if progress was to be made in the mills. Accordingly the organisation committee had agreed to release some of the younger trained staff for service in the industry if any of the members applied for such assistance.

Statutory Meeting of Acetex Safety Glass

THE statutory meeting of Acetex Safety Glass, Ltd., was held in London on Friday, September 28, Sir Frederick J. Willis (chairman), presided, and in the course of his remarks said that notifications had been received from the Patent Office that the applications for patents were in order for acceptance. No restrictive amendment was required. The company acquired the patents for the British Empire (excluding Canada), and applications had been made for registration of the patents in the chief parts of the Empire. The works of Samuel Banner and Co., Ltd., of Liverpool, were now producing and delivering to the trade. Arrangements had been made for an adequate and regular supply of material.

Coke-Oven Plant for Gas Light and Coke Co.

ON Tuesday, delegates to the London Fuel Conference (World Power Conference), attended a luncheon at the headquarters of the Gas Light and Coke Co., Horseferry Road, London, S.W., before visiting the company's works at Fulham. Sir David Milne-Watson, who presided at the luncheon, mentioned as showing the efforts of the company to keep abreast of the times, that they were considering the installation of coke-oven plant capable of dealing with 1,200 tons of coal per day.

Electro Bleach and By-Products Works Closing

OVER 200 workpeople are affected by the decision to close down the major portion of the process carried on by Electro Bleach and By-Products, Ltd., at Middlewich. The works were built in 1900, were taken over by Brunner Mond and Co. in 1920, and later merged into Imperial Chemical Industries. A proportion of the employees will be transferred to other works in the combine, the remainder being compensated according to their years of service.

From Week to Week

EXPORTS of asbestos from Cyprus in July were valued at £41,075.

LORD MELCHETT arrived in New York on the *Homeric* on Wednesday, September 26.

THE BURMAH OIL CO. is to purchase 833,333 ordinary shares of the Shell Transport and Trading Co.

THE L.N.E.R. Co. have purchased from Peace and Partners the Lackenby slag heap near Middlesbrough, which is estimated to contain two million tons of slag.

PROFESSOR J. C. DRUMMOND will give a course of six lectures on "Recent Work on Vitamins" at University College, London, on Friday, October 12, 19, and 26, and November 2, 9, and 16, at 5 p.m.

MR. A. DE BAVAY, chairman of Amalgamated Zinc (De Bavay's), Ltd., has been promoted by the King of the Belgians to the Commandership of the Order of the Crown of Belgium.

POLLOPAS, LTD., is to erect a factory at Nottingham, for the manufacture of synthetic resin. Professor E. C. C. Baly, of Liverpool, and his son have been working on the improvement of Pollopas products.

IT IS UNDERSTOOD that Dorman, Long and Co., Ltd., is interested in the low-temperature carbonisation process of the Illingworth Carbonisation Co., Ltd. An issue of shares will probably be made shortly by the latter company.

CONTINENTALE "L & N" Kohlendistillation of Berlin, the German operating company of Sensible Heat Distillation (L. & N. process) has just received an order for the erection of a plant to distil 125 tons of coal per day.

CHEMICALS, PHARMACEUTICALS AND DYES exported from Switzerland in July were valued 13.7 million francs. There was an increase of 700,000 francs in the exports of aniline dyes, as compared with July, 1927, and an increase of 600,000 francs in exports of indigo.

AT THE INQUEST, on Thursday, September 20, on Maurice Salaman Salaman, consulting chemist, aged 39, of Sudbury, the coroner, returning his verdict, said the deceased took his own life while of unsound mind, death being due to cyanide of potassium poisoning.

A MEETING of the British Section of the Society of Leather Trades' Chemists will be held at the Shoe and Leather Fair, Royal Agricultural Hall, London, on October 11, at 10 a.m. Papers will be read by Dr. Burton, Dr. C. H. Spiers, Mr. R. H. Marriott and Dr. Gordon Parker.

DR. W. T. H. WILLIAMSON, senior assistant lecturer in agricultural chemistry at the Edinburgh and East of Scotland College of Agriculture, has resigned, on appointment as Director of the Chemical Section of the Egyptian Ministry of Agriculture at Cairo, in succession to Mr. W. S. Gray, who died on August 31.

TO PERPETUATE THE MEMORY of the late Professor Liversidge, who occupied the chair of chemistry from 1874 to 1907, the university of Sydney has decided to award annually two scholarships valued at £50 each to the students showing the greatest proficiency in chemistry at the leaving certificate examination.

BEET SUGAR NEWS.—The Beet Sugar Corporation is to spend £12,000 on purification plant in order that its beet factory at Felstead, Essex, may be re-opened. Last year proceedings were taken against the company for polluting a stream, and the purification plant is designed to prevent the recurrence of such nuisance.

MR. T. THORNE BAKER, chief chemist to the Imperial Dry Plate Co., Ltd., Dr. L. C. Martin, of the Department of Optics, Imperial College of Science, and Mr. H. O. Klein are the consultants to Colour Snapshots (1928), Ltd., which has made an issue of 750,000 ordinary shares of 4s. each. Major A. B. Klein, formerly colour adviser to the Calico Printers Association, will be technical director of the company.

A PUBLIC ISSUE OF SHARES is to be made by the Acetate Products Corporation, which has been formed with a capital of £675,000 to manufacture on a large scale non-inflammable safety celluloid, cellulose varnishes, and cellulose brushing paints, and to acquire part of the old-established business of Greenhill and Sons, Ltd., one of the largest celluloid manufacturers in the country. Three factories have been acquired at Richmond (Surrey), Leytonstone, and Slough.

A NOTABLE FIRST STEP towards the completion of an ambitious scheme of expansion in connection with the University of Leeds was taken on Tuesday, when the Duchess of Devonshire laid the foundation stone of a new wing which is to be the home of the Mining Department. The Yorkshire Coalowners' Association has contributed £25,000 and the Miners' Welfare Committee £10,000 towards the cost. The Department when completed will form the right wing of the new University frontage, and will contain research laboratories, a lecture theatre, and a museum.

THE UNION CHIMIQUE BELGE has just acquired 115 hectares of land at Condé, for the erection of a synthetic ammonia factory.

A HYDROGEN FACTORY is to be built at Varpalota, Hungary, with State assistance, by the firm of Gebr. Gutbrod, of Frankfurt a.M.

IMPORTS OF CHEMICALS into Czechoslovakia in July were valued at 26,000,000 crowns. Exports were valued at 22,000,000 crowns.

DR. ALBERT L. MOND, consulting chemist to Imperial Chemical Industries, Ltd., has been appointed consulting chemist to Transparent Paper, Ltd.

POTASH SALES in Germany in August were the highest on record, amounting to 1,014,000 metric tons, against 888,000 tons in the parallel period last year.

THE CHEMICAL ENGINEERING GROUP announces, as an alteration in its programme, that the annual meeting will take place on May 10, 1929, instead of May 3.

A DISMANTLEMENT SALE of plant at the Yate Chemical Works, near Bristol, is taking place. Details of the material available are given in our advertisement columns, p. xxiii.

POLISH IMPORTS of organic chemical materials and products in the month of July amounted in value to 12,129,000 zloty, and exports of similar materials to 1,539,000 zloty.

MR. H. TALBOT has relinquished his position as general manager of the Welsbach Light Co., Ltd., in order to take up the duties of general manager of The Non-Inflammable Film Co., Ltd.

SPANISH PRODUCTION of synthetic ammonia (by the Claude and Casale processes) is equivalent to 7,000-8,000 tons of nitrogen per annum. There is also a small by-product ammonium sulphate production.

MR. W. C. BRIDGEMAN, First Lord of the Admiralty, opened the new Mining and Engineering Laboratory at Oswestry Technical Institute during the week. The Miners' Welfare Fund has contributed £750 towards the installation of the laboratory.

DR. PAUL STAMBERGER will deliver the Gow Lectures at University College, London, in the present session. The lectures, which will deal with "The Colloid Chemistry of the Rubber Industry," will take place at 5 p.m. on November 12, 14, 16, 19 and 21.

DELEGATES to the Fuel Conference visited Bargoed, South Wales, last week-end, and inspected the collieries and by-product plant of the Powell Duffryn Co., Ltd., which, with its subsidiary companies, now controls an output of over 10 million tons per annum.

THE ESTABLISHMENT of the Goliath Portland Cement Co., Ltd., in Tasmania, is proceeding so satisfactorily that it is expected that the plant will be in operation in 18 months. Plant will be purchased from Denmark and the factory will be managed by Dorman, Long and Co., Ltd., for five years.

RECENT WILLS INCLUDE—Mr. John Arthur Kipling, a representative of Hadfields, Ltd., £7,689 (net personalty £7,396).—Sir Mortimer Barnett Davis, of Montreal, president of the Canadian Asbestos Co., and chairman of the Canadian Industrial Alcohol Co., left a very large fortune, the amount of which has not yet been disclosed. The English estate is valued at £5,951 (net personalty).

THE CHEMICAL AND METALLURGICAL CORPORATION is now receiving regular monthly consignments of platinum ores at the Runcorn works. The plant has been running for the past fortnight on ores received from Potgeitersrust Platinums, and the first "clean up" is expected in a fortnight. The pilot plant in London obtained a 95 per cent. extraction, and better results are expected at Runcorn.

THE HOLBOROUGH CEMENT CO. announces the calling of an extraordinary meeting for the purpose of sanctioning an increase of capital to £1,500,000, by the creation of 1,000,000 new shares of £1 each to rank *pari passu* with existing shares. The directors propose to issue 500,000 of these shares at 35s. per share, and have contracted with British Cement Products and Finance Co., Ltd., to subscribe for this issue at the price mentioned. This capital is to be applied to purchase from the Cement Products Co. a controlling interest in the Dunstable Portland Cement Co.

ARTIFICIAL SILK NEWS.—Delegates representing the Comptoir des Textiles Artificiels, Courtaulds, Glanzstoff, Enka, Emmenbrucke and Sina Viscosa have formed an international bureau for the standardisation of artificial fibres.—Plans have been passed by the Lowestoft Corporation for the erection of an artificial silk factory.—British Bemberg, Ltd., is the firm which has decided to establish a factory at Doncaster and provisional arrangements have been made for the purchase of 60 acres of land.—The French Rhodiaseta Co. intends to establish a factory in Italy. A large plant working Rhodiaseta patents is to be established in the United States by the Du Pont Rayon Co., and plans are in hand for the establishment of a plant in England, in which also Du Pont will be interested.—The I.G. Farbenindustrie A.G. has acquired a large parcel of shares in British Breda Silk, Ltd.

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Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

296,121. NITRIC ACID, MANUFACTURE OF. W. R. Ormandy, 18, Belsize Grove, Belsize Park, London, N.W.3. Application date, May 25, 1927.

When fuel oil is burnt with air in a flame submerged in water, the oil and air being supplied at a pressure of 90 lb. per square inch, no nitric acid is produced, but if about 0.04 per cent of a vanadium compound is introduced into the flame a considerable proportion of nitric acid is obtained. The nitric acid is preferably absorbed in a suspension of calcium carbonate or milk of lime which may be added to the water. The process can be carried out in a steam generator heated by a submerged flame.

296,145. MONTAN WAX, TREATMENT OF. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application dates, June 9 and December 22, 1927.

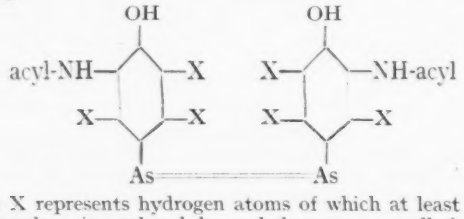
Montan wax which has been bleached by treatment with oxidising agents such as chlorine or chromic acid has a tendency to crystallise when used for making polishes, owing to its high content of free organic acids. This may be avoided by completely or partly converting the free organic acids into salts or esters, or by converting the carboxyl groups of the acids into other groups containing the CO group which do not contain a carboxyl hydrogen atom. Preferably only part of the free organic acids is converted into esters, *e.g.*, by treating with alcohols such as glycerol, and the remaining part into salts by action of an alkali or alkaline earth hydroxide. Examples are given.

296,172. RECOVERING CONCENTRATED ACETIC ACID FROM DILUTE ACETIC ACID, PROCESS FOR. H. Suida, Jubiläumsstrasse 33, Mödling, near Vienna. Application date, July 18, 1927. Addition to 230,447.

Specification No. 230,447 (See THE CHEMICAL AGE, Vol. XII, p. 507), describes the concentration of acetic acid by passing the superheated vapour of the dilute acetic acid in counter current to a solvent or concentrating agent insoluble or difficultly soluble in water, and having a higher b. p. than acetic acid. The concentrating agent is then distilled to obtain concentrated acetic acid. In this invention, the concentrating agents employed are esters of cyclical particularly polyvalent carboxylic acids, *e.g.*, the methyl, ethyl, and butyl esters of the naphthene acids or of orthophthalic acid. Examples are given of the use of ortho-phthalic acid dibutyl ester, and ortho-phthalic acid dihexyl ester. The process is suitable for concentrating acetic acid from the manufacture of cellulose acetate.

296,327. SUBSTITUTED 4 : 4^1-DIHYDROXY-5 : 5^1-ACYLAMINO ARSENOBENZENES, MANUFACTURE OF. K. Carpmael and K. S. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, May 27, 1927.

Specification No. 278,789 (see THE CHEMICAL AGE, Vol. XVII, p. 466) describes the production of substituted 4-hydroxy-3-acetamino-phenyl-1-arsinic acids and these compounds are now reduced with any reducing agent such as sodium hypo-phosphite to obtain substituted 4 : 4^1-dihydroxy-5 : 5^1-acylamino-arsenobenzenes which have the general formula



where X represents hydrogen atoms of which at least one in each nucleus is replaced by a halogen or an alkyl group. These compounds are employed for therapeutic purposes, and those which contain a chlorine atom in each benzene nucleus are particularly valuable. Examples are given.

296,386. VAT DYESTUFFS, PRODUCTION OF. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, May 30, 1927.

Condensation products which can be employed as vat dyestuffs and as intermediate products for the production of other dyestuffs are obtained by treating anthra-pyrimidone or its substituted products or derivatives with alkaline condensing agents. The condensation products may be treated with alkylating agents to obtain vat dyestuffs which are usually yellow. Similar products can be obtained by treating anthrapyrimidine or its substitution products or derivatives with alkaline condensing agents The products can be purified by treatment with oxidising agents, or by recrystallisation or fractionation from their solutions in concentrated sulphuric acid. Examples are given of the condensation of anthrapyrimidone with caustic potash and subsequent treatment of the condensation product with *p*-toluene sulphonic acid methyl ester and potassium carbonate; and also the alkaline condensation of anthrapyrimidine.

296,458. INTERMEDIATE COMPOUNDS FOR THE PREPARATION OF DYESTUFFS. British Dyestuffs Corporation, Ltd., Hexagon House, Blackley, Manchester. J. B. Payman and E. G. Bainbridge, Crumpsall Vale Chemical Works, Blackley, Manchester. Application date, May 2, 1927.

The preparation of compounds containing one or more sulphonic acid groups, sulphonamide groups, or sulphonarylide groups is known, but it is difficult to obtain compounds containing two different groups, or to obtain sulphon-chlorides, amides, or arylides of oxy bodies owing to the action of the phosphorus pentachloride on the hydroxy groups. It is now found that naphtha-sultone sulphonic acids when treated with phosphorus pentachloride are converted into the naphtha-sultone sulphochlorides, and the latter can be treated with ammonia or amines substantially in the absence of water to obtain amides or arylides, or mixed amido arylides, or amide sulphonic acids, or arylide sulphonic acids. Examples are given of the preparation of 1 : 8 naphtha-sultone-3-sulphochloride and its treatment with dry ammonia to obtain 1 : 8-naphtha-sultone-3-sulphonamide, or with aniline to obtain 1 : 8-naphthasultone-3-sulphonanilide. If the sulpho-chloride is allowed to stand for several days with cold concentrated ammonia solution, 1-naphthol-3 : 8-disulphonamide is obtained. 1 : 8-naphtha-sultone 3-sulphonanilide may be treated with caustic soda to obtain the sodium salt of 1-naphthol-3-sulphonanilide-8-sulphonic acid, or with concentrated ammonia solution to obtain 1-naphthol-3-sulphonanilide-8-sulphonamide.

296,473. AZO-DYESTUFFS, MANUFACTURE OF. O. Y. Imray, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, June 1, 1927.

These dyestuffs are obtained in substance, or in substratum, or on the fibre by coupling a 2 : 5-dimethyl-4 : 6- or 3 : 4-dihalogen-1-aniline with an arylide of 2-oxynaphthalene-3-carboxylic acid or with an arylide of the *b*-keto-carboxylic acid. The resulting dyestuffs are fast to kier boiling and some examples are given. The 2 : 5-dimethyl-4 : 6-dihalogen-1-aniline referred to above can be made by saponifying the 1-acetylamino-2 : 5-dimethyl 4 : 6-dihalogen-benzene or by halogenating mineral salts of 1-amino-2 : 5-di-methylbenzene, and the 2 : 5-dimethyl- 3 : 4-dihalogen- 1-aniline can be obtained by halogenating the 2 : 5-dimethyl-1-aniline or the 2 : 5-dimethyl-4-halogen-1-aniline.

296,490. CONDENSATION PRODUCTS OF THE BENZANTHRONE SERIES, MANUFACTURE OF. A. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges. Frankfort-on-Main, Germany. Application date, June, 9, 1927.

These condensation products are obtained by treating Bz1-nitro-2-methyl-benzanthrone with an acid condensing agent such as fuming sulphuric acid, chlorosulphonic acid, or a mixture of these, or aluminium chloride, with or without an indifferent solvent. The products are practically insoluble in

organic solvents, but soluble in concentrated sulphuric acid. With an alkaline solution of hydrosulphite a reddish coloured vat is obtained which dyes cotton greenish or bluish grey to black. In the above reaction a by-product is obtained which is soluble in organic solvents, or may be extracted with dilute caustic soda lye, and the solution acidified. The product is probably an inner anhydride of the Bzl-amino-benzanthrone-2-carboxylic acid.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention :—272,483 (I.G. Farbenindustrie Akt.-Ges.), relating to cracking of mineral oils, tars, etc., see Vol. XVII, p. 153; 272,924, 273,299, and 279,401 (I.G. Farbenindustrie Akt.-Ges.), relating to dyestuffs of the anthracene series, see Vol. XVII, pp. 201, 221 and 579; 279,377 (Commercial Solvents Corporation), relating to synthetic production of methanol, see Vol. XVII, p. 579; 283,913 (H. W. Dandt), relating to tetra alkyl lead, see Vol. XVIII, p. 271; 288,571 (Schering Kahlbaum Akt.-Ges.), relating to 5-iodo-2-aminopyridine, see Vol. XVIII, p. 555; 291,340 (I.G. Farbenindustrie Akt.-Ges.), relating to 7-acylamino-1 : 4-naphthoquinones, see Vol. XIX, p. 105; 293,753 (Rheinische Kampfer Fabrik Ges.), relating to thymol, see Vol. XIX, p. 243.

International Specifications not yet Accepted

294,580. HYDROGEN. Gasverarbeitungs Ges., Sodingen, Westphalia, Germany. International Convention date, July 26, 1927.

Hydrogen obtained from methane is freed from carbon dioxide and treated in a scrubber with liquid nitrogen under pressure to remove traces of methane, carbon monoxide, carbon and other sulphides, arsenic compounds, oxygen, and argon. The hydrogen is then passed at 400° C., and increased pressure over metallic catalysts and dried to remove oxygen compounds. The hydrogen contains nitrogen, and is used for ammonia synthesis.

294,582. QUATERNARY AMMONIUM COMPOUNDS. Soc. of Chemical Industry in Basle, Switzerland. International Convention date, July 26, 1927. Addition to 219,304.

The monoacylated or unsymmetrically diacylated diamines described in specification 219,304 (see THE CHEMICAL AGE, Vol. XI, p. 299) are treated with an alkylating or aralkylating agent. Thus, oleyl-diethyl-ethylene diamine may be treated with methyl iodide.

294,583. DYES. Soc. of Chemical Industry in Basle, Switzerland. International Convention date, July 26, 1927.

The pyrazolones obtained by condensing oxalacetic acid esters with hydrazine are coupled with diazo, diazoazo, or tetrazo compounds to obtain azo dyes. According to the selection of the coupling compounds, the products are acid dyestuffs, varnish colours, direct cotton dyestuffs, or mordant dyestuffs. Examples describe the following dyestuffs and their application: 2-naphthylamine-1-sulphonic acid→(coupled alkaline) 5-pyrazolone-3-carboxylic acid; aniline→(coupled alkaline) 5-pyrazolone-3-carboxylic acid ethyl ester; 4-chloro-2-aminophenol-5 (or 6)-sulphonic acid→5-pyrazolone-3-carboxylic acid; anthranilic acid→5-pyrazolone-3-carboxylic acid; aminoazo-benzene-sulphuric acid→5-pyrazolone-3-carboxylic acid; aniline→ethyl ester of 5-pyrazolone-3-carboxylic acid; and others.

294,626. ACETIC ACID. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, July 29, 1927. Addition to 284,588.

Acetic acid is concentrated by distilling with an alkyl acetate and a hydrocarbon or chlorine derivative of a hydrocarbon, such as benzene or ethylene chloride.

294,654. FERTILISERS. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, July 29, 1927.

A mixed fertiliser is obtained by treating ammonium nitrate with sodium chloride and potassium chloride solutions and separating the mixed salts.

294,655. TREATING SEA-WATER. H. Bardt, 1, Innsbruckerplatz, Schöneberg, Berlin. International Convention date, July 29, 1927.

Sea-water is treated with reducing agents such as sulphur dioxide or sulphite lye and a mixture of activated carbon with metal powder such as copper, aluminium, iron or zinc, to obtain gold, silver, bromine, and iodine.

294,661. SYNTHETIC INDIARUBBER. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, July 28, 1927. Addition to 283,840. (See THE CHEMICAL AGE, Vol. XVIII, p. 271.)

Butadiene, isoprene, dimethyl butadiene, etc., are polymerized by means of oxygen in presence of a metal salt of an inorganic or organic acid such as salts of cobalt, lead, manganese, chromium, nickel, or silver. Examples are given.

294,883. DYES. Soc. of Chemical Industry in Basle, Switzerland. International Convention date, July 30, 1927.

Azo dyes are produced by coupling diazo compounds of aryl- or alkyl-ethers of *o*-aminophenols with *o*-aryloxy- or *o*-aralkyloxy-anilides of 2 : 3-oxynaphthoic acid. Examples include 4-chloro-2-amino-diphenylether→ the *o*-phenoxy-anilide of 2 : 3-oxynaphthoic acid. Other similar ethers can also be used.

294,889. OXYALDEHYDES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, July 30, 1927.

Oxyaralkyl-amines are boiled with dilute alkali in the presence of isatin or a derivative. The amount of isatin can be reduced to catalytic quantities if air or other gaseous oxidizing agent is introduced. Thus, *o*-oxybenzyl-amine and vanillylamine hydrochloride may be oxidised by boiling with alkaline potassium isatin-5-sulphonate, to obtain *o*-salicylic-aldehyde and vanillin. Examples using air with potassium isatin-5-sulphonate as a catalyst are also given.

294,958. HYDROGEN. Koku-Kenkyujo, 8, Etchujima-Machi, Fukagawa-Ku, Tokio. International Convention date, August 2, 1927.

The inflammability of hydrogen is reduced by adding a small amount of a compound having a higher flame propagation temperature than hydrogen, such as benzene, toluene, methyl or ethyl alcohol, ether, paraffin, hydrocarbons, methyl cyclohexane, dimethyl or diethyl selenide, tetramethyl tin or lead.

294,963. SYNTHETIC RUBBER. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, August 2, 1927.

Butadiene, isoprene, etc., are polymerized in presence of water by a substance which exerts a hydrotropic action, *e.g.*, a salt of an organic sulphonic or carboxylic acid, or a substitution product or an acid obtained from the degradation of albumen or an acid amide. Oxygen, inorganic acids, etc., may also be present. In examples, butadiene or isoprene and water are treated with casein and potassium cinnamate, blood albumen and sodium tetra-hydronaphthalene sulphonate, or magnesium isobutyl-naphthalene sulphonate and oxygen.

294,975. CONTACT SULPHURIC ACID PROCESS. Selden Co., 339, 2nd Avenue, Pittsburg, U.S.A. (Assignees of A. O. Jaeger, 9, Grandview Avenue, Crafton, Pa., U.S.A.) International Convention date, August 3, 1927.

The catalyst employed consists of at least one catalytically active, non-siliceous, base exchange body, in which at least one catalytically active component is combined in exchangeable or non-exchangeable form with or without stabilisers combined or associated with the base exchanging body. A large number of examples are given of the production of these catalysts, of which the following is typical: a suspension of vanadium pentoxide in dilute sulphuric acid is reduced with sulphur dioxide to vanadyl sulphate. Part of the latter is treated with potassium hydroxide to obtain potassium vanadite, which is mixed with sodium aluminate and a diluent such as a base exchanging aluminium polysilicate. The remainder of the vanadyl sulphate is added, and the product is pressed, dried, broken, and sprayed with sulphuric acid.

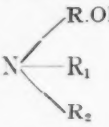
294,986. ANTHRAQUINONE DYES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, August 3, 1927. Addition to 282,409. (See THE CHEMICAL AGE, Vol. XVIII, p. 183.)

1-amino-4-bromanthraquinone 2-sulphonic acid is condensed with 4-aminoformanilide having an alkyl group in the formylamino group. Acid wool dyestuffs are obtained.

295,024. DISPERSING AGENTS. E. I. Du Pont de Nemours and Co., Wilmington, Del., U.S.A. Assignees of J. G. Kern and C. J. Sala, Wilmington, Del., U.S.A. International Convention date, August 4, 1927.

Products which have greater dissolving and dispersing power than ordinary soaps or sulphonated oils are obtained by

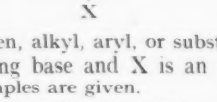
treating aliphatic acids or derivatives such as their glycerides or sulphonic acids with oxy-alkylamines having the formula



in which R represents an alkyl group and R_1 and R_2 represent hydrogen, an aliphatic, hydroxyaliphatic, or a polyaliphatic radicle. Examples are given of the treatment of oleic acid and stearic acid with triethanol-amine and other substances. The products can be used in the manufacture of antiseptic mercuric oxide soaps.

295,032. DYES. J. R. Geigy Akt.-Ges., 50, Riehenring, Basle, Switzerland. International Convention date, August 6, 1927.

These dyes are obtained by treating an unsulphonated aminoazo dyestuff successively with chloracetyl chloride and a tertiary or secondary aromatic base or a di- or tri-alkylamine of the aliphatic series. Alternatively one or more of the components may be treated successive with chloracetyl chloride and then coupling to obtain a dyestuff. The products are strongly basic azo dyestuffs containing the group



in which A is hydrogen, alkyl, aryl, or substituted aryl, B is the residue of a strong base and X is an acid residue. A large number of examples are given.

LATEST NOTIFICATIONS.

297,007. Manufacture of maleic acid and maleic anhydride. Boehringer, A. September 24, 1927.

297,381. Process for the production of magnesium compounds, and particularly magnesia, from dolomite. I.G. Farbenindustrie Akt.-Ges. September 20, 1927.

297,416. Process for the simultaneous production of phosphorus or phosphoric acid and binding-agents having latent hydraulic properties. I.G. Farbenindustrie Akt.-Ges. September 21, 1927.

297,385. Manufacture of optically-active phenylpropanol-methylamine. I.G. Farbenindustrie Akt.-Ges. September 20, 1927.

297,403. Process for diminishing swelling in cellulose and cellulose products. I.G. Farbenindustrie Akt.-Ges. September 23, 1927.

297,070. Manufacture of films, bands, threads, and the like from cellulose ethers. I.G. Farbenindustrie Akt.-Ges. September 24, 1927.

297,362. Manufacture of azo-dyestuffs. I.G. Farbenindustrie Akt.-Ges. September 19, 1927.

297,439. Film-shifting device for cameras. I.G. Farbenindustrie Akt.-Ges. September 21, 1927.

297,440. Double exposure preventative for cameras. I.G. Farbenindustrie Akt.-Ges. September 21, 1927.

297,441. Manufacture of acid dyestuffs of the phenonaphthosafranine series. Geigy Akt.-Ges., J. R. September 21, 1927.

297,478. Manufacture of dyestuffs. Soc. of Chemical Industry in Basle. September 23, 1927.

297,687. Manufacture of dyestuffs containing metal. Soc. of Chemical Industry in Basle. September 24, 1927.

Specifications Accepted with Date of Application

297,535. Hydrogen, Manufacture of. I.G. Farbenindustrie Akt.-Ges. March 10, 1926.

272,908 Metallic compounds of azo dyestuffs, Production of. I.G. Farbenindustrie Akt.-Ges. June 15, 1926.

274,438. Purifying pig iron. F. Wüst. July 17, 1926.

275,943. Valuable coloured compounds, Manufacture of. I.G. Farbenindustrie Akt.-Ges. August 12, 1926.

279,425. Heat-treating copper-nickel-beryllium alloys. Processes for. M. G. Corson. October 20, 1926.

296,819. Complex metal compounds of *o* hydroxymonoazo dyestuffs, Manufacture of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) May 20, 1927.

297,009. Ammonium phosphate, Production of. S. G. S. Dicker. (*Chemical Products Co.*) June 10, 1927.

297,019. Crystalline menthol, Manufacture of. Howards and Sons, Ltd., and J. W. Blagden. June 8, 1927.

297,042. Anthraquinone derivatives, Manufacture of. O. Y. Imray. (*I.G. Farbenindustrie Akt.-Ges.*) April 13, 1927.

297,075. Compounds from indene and phenols, Process for the manufacture of. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges*) June 14, 1927.

297,076. Colouring materials, Production of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) March 14, 1927.

297,129. Derivatives and condensation products from anthraquinone, Manufacture of. K. Carpmael and K. S. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) May 12, 1927.

297,133. Vat dyestuffs of the anthraquinone series, Manufacture of. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) June 11, 1927.

297,135. Hydrogen, Production of. M. Casale-Sacchi. June 13, 1927.

297,165. Alloys resistant to chemical action. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) June 30, 1927.

297,179. Benzene and its homologues from mixtures of oxides of carbon and hydrogen, Production of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) July 13, 1927.

297,231. Diolefines from naphtha, naphtha-fractions, and naphtha residues, Process for producing. B. W. Bysow. October 20, 1927.

297,234. Derivatives of anthanthrone, Manufacture of. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) October 25, 1927.

297,212. Aromatic amines, Production of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) September 10, 1927.

272,919. Rendering higher alcohols soluble in aqueous media, Method of. H. T. Bohme and H. Bertsch. June 15, 1926.

Applications for Patents

Bennet, A. J., and Leeson, L. H. Low-temperature carbonisation of powdered fuel, etc. 27,727. September 27.

British Dyestuffs Corporation, Ltd., and Hailwood, A. J. Manufacture of solubilised dye, and process of dyeing therewith. 27,638. September 26th.

Chemisch-Technische Ges., and Marks, Sir G. C. Distillation of coal. 27,641. September 26.

Colas Products, Ltd. Bituminous emulsions. 27,927. September 28.

Gibson, W., Henshaw, C. R., Imperial Chemical Industries, and Payman, J. B. Manufacture of triaryl phosphates. 27,790. September 27.

Gibson, W., Henshaw, C. R., Imperial Chemical Industries, and Payman, J. B. Manufacture of alkyl ethers of ethylene glycol. 27,791. September 27.

Glücksmann, E. Production of salts of halogen. 27,758. September 27. (Germany, September 29, 1927.)

Gubelmann, I., Stallman, O., and Weiland, H. J. 4¹-Sulpho ortho benzoyl benzoic acids, etc. 27,402. September 24.

Hansen, C. J. Removing ammonia, etc., from gases. 27,341. September 24. (Germany, April 5.)

Hansen, C. J. Obtaining ammonium sulphate, etc., from ammonium thio-cyanate. 27,342. September 24. (Germany, April 14.)

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of homologues of dioxane. 27,356. September 24.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of products resembling wax. 27,357. September 24.

I.G. Farbenindustrie Akt.-Ges., and Imray, O. Y. Manufacture of photographic surfaces. 27,624. September 26.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Production of condensation products from benzoquinones. 27,627. September 26.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of light-coloured products from paraffin wax, etc. 27,745. September 27.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of metal carbonyls. 27,746. September 27.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Conversion of coal, etc., into fuels. 27,870. September 28.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of anthraquinone, etc. 27,871. September 28.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of finely-divided metal powders obtained from carbonyls. 27,872. September 28.

I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of products having properties of resins, etc. 27,988. September 29.

I.G. Farbenindustrie Akt.-Ges. Spinning artificial threads. 27,513 September 25. (Germany, September 26, 1927.)

I.G. Farbenindustrie Akt.-Ges. Electric insulation. 27,619. September 26. (Germany, September, 26, 1927.)

I.G. Production of metal carbonyls. 27,989. September 29. (Germany, May 29.)

Imperial Chemical Industries, Ltd. Drying Process. 27,969. (September 29.)

Meissner, J., and Schmid, A. Denitrating residuary acids. 27,528. September 25. (Austria, October 15, 1927.)

Roessler and Hasslacher Chemical Co. Process for producting perborates. 27,661. September 26. (United States, September 27, 1927.)

Soc. of Chemical Industry in Basle. Manufacture of dyestuffs containing metal. 27,428. September 24. (Switzerland, September 24, 1927.)

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC. 40% TECH.—£19 per ton.

ACID BORIC, COMMERCIAL.—Crystal, £30 per ton; powder, £32 per ton; extra fine powder, £34 per ton.

ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.

ACID NITRIC, 80° TW.—£21 10s. to £27 per ton, makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.

BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages free.

BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.

BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2-cwt. bags carriage paid any station in Great Britain.)

CALCIUM CHLORIDE (SOLID).—£5 to £5 5s. per ton d/d carr. paid.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 3d. to 1s. 8d. per gall., pyridinised industrial, 1s. 5d. to 1s. 10d. per gall.; mineralised, 2s. 4d. to 2s. 8d. per gall.; 64 O.P., 1d. extra in all cases.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE.—4½d. per lb.

POTASSIUM CHLORATE.—3¾d. per lb., ex wharf, London, in cwt. kegs.

SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.

SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

SODA CRYSTALS.—£5 to £5 5s. per ton, ex railway depots or ports.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.

SODIUM BICHROMATE.—3½d. per lb.

SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.r. London.

SODIUM CHLORATE.—2¾d. per lb.

SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.

SODIUM PHOSPHATE.—£14 per ton, f.o.b. London, casks free.

SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.

SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.b. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—6½d. to 6¾d. per lb. Crude 60's, 2s. per gall.

ACID CRESYLIC 99/100.—2s. 6d. to 3s. per gall. 97/99.—2s. 5d. to 2s. 6d. per gall. Pale, 95%, 2s. 2d. to 2s. 3d. per gall. Dark, 1s. 10d. to 2s.

ANTHRACENE.—A quality, 2½d. per unit. 40%, £5 per ton.

ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Unstrained, 7½d. to 8d. per gall.

BENZOLE.—Prices at works: Crude, 10½d. to 11d. per gall.; Standard Motor, 1s. 4½d. to 1s. 5d. per gall.; 90%, 1s. 7d. to 1s. 8d. per gall.; Pure, 1s. 10d. to 1s. 11d. per gall.

TOLUOLE.—90%, 1s. 5d. to 1s. 11d. per gall. Firm. Pure, 1s. 10d. to 2s. 1d. per gall.

XYLOL.—1s. 3d. to 1s. 11d. per gall. Pure, 1s. 6d. to 1s. 7d. per gall.

CREOSOTE.—Cresylic, 20/24%, 9d. per gall.; middle oil, 6¾d. to 7¼d. per gall. Heavy, 7⅛d. to 8⅛d. per gall. Standard specification, 5¾d. to 6¼d. per gall. ex works. Salty, 7¼d. per gall.

NAPHTHA.—Crude, 8¼d. to 9d. per gall. Solvent 90/160, 1s. 1½d. to 1s. 2½d. per gall. Solvent 95/160, 1s. 2d. to 1s. 7d. per gall. Solvent 90/190, 11d. to 1s. 4d. per gall.

NAPHTHALENE CRUDE.—Drained Creosote Salts, £5 per ton. Whizzed, £8 per ton. Hot pressed, £8 10s. to £9 per ton.

NAPHTHALENE.—Crystals, £13 to £14 10s. per ton. Quiet. Flaked, £14 to £15 per ton, according to districts.

PITCH.—Medium soft, 43s. 9d. to 46s. 3d. per ton, f.o.b., according to district. Nominal.

PYRIDINE.—90/140, 5s. to 6s. per gall. 90/180, 2s. 6d. to 4s. per gall. Heavy, 2s. to 2s. 6d. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. per lb. 100 %.

ACID BENZOIC.—1s. 8½d. per lb.

ACID GAMMA.—4s. 6d. per lb.

ACID H.—3s. per lb.

ACID NAPHTHIONIC.—1s. 6d. per lb.

ACID NEVILLE AND WINTHER.—4s. 9d. per lb.

ACID SULPHANILIC.—8½d. per lb.

ANILINE OIL.—8d. per lb. naked at works.

ANILINE SALTS.—8d. per lb. naked at works.

BENZALDEHYDE.—2s. 3d. per lb.

BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.

BENZOIC ACID.—1s. 8½d. per lb.

o-CRESOL 29/31° C.—5½d. per lb.

m-CRESOL 98/100%.—2s. 3d. to 2s. 6d. per lb.

p-CRESOL 32/34° C.—2s. 3d. to 2s. 6d. per lb.

DICHLORANILINE.—2s. per lb.

DIMETHYLANILINE.—1s. 11d. per lb.

DINITROBENZENE.—8½d. per lb. naked at works. £75 per ton.

DINITROCHLORBENZENE.—£84 per ton d/d.

DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.

DIPHENYLAMINE.—2s. 10d. per lb. d/d.

a-NAPHTHOL.—2s. per lb. d/d.

B-NAPHTHOL.—10d. per lb. d/d.

a-NAPHTHYLAMINE.—1s. 3d. per lb.

B-NAPHTHYLAMINE.—3s. per lb.

o-NITRANILINE.—5s. 9d. per lb.

m-NITRANILINE.—3s. per lb. d/d.

p-NITRANILINE.—1s. 8d. per lb.

NITROBENZENE.—6d. per lb. naked at works.

NITRONAPHTHALENE.—1s. 3d. per lb.

R. SALT.—2s. 2d. per lb.

SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100% basis d/d.

o-TOLUIDINE.—8d. per lb.

p-TOLUIDINE.—1s. 10d. per lb. naked at works.

m-XYLIDINE ACETATE.—2s. 6d. per lb. 100%.

N. W. ACID.—4s. 9d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £10 5s. per ton. Good demand. Grey, £14 10s. to £15 per ton. Liquor, 9d. per gall.

CHARCOAL.—£6 to £9 per ton, according to grade and locality. Foreign competition severe.

IRON LIQUOR.—1s. 3d. per gall, 32° Tw. 1s. per gall. 24° Tw.

RED LIQUOR.—9d. to 10d. per gall.

WOOD CREOSOTE.—1s. 9d. per gall. Unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. 11d. to 4s. 3d. per gall. Solvent, 4s. 3d. per gall.

WOOD TAR.—£4 to £5 per ton.

BROWN SUGAR OF LEAD.—£40 15s. per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 5½d. per lb., according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—1s. 9d. per lb.

BARYTES.—£2 16s. 10d. to £3 10s. per ton, according to quality.

CADMIUM SULPHIDE.—3s. 9d. to 4s. 6d. per lb.

CARBON BISULPHIDE.—£25 to £27 10s. per ton, according to quantity.

CARBON BLACK.—5½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£45 to £54 per ton, according to quantity. drums extra.

CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.

DIPHENYLGUANIDINE.—3s. 9d. per lb.

INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5d. to 6½d. per lb.

LAMP BLACK.—£35 per ton, barrels free.

LEAD HYPOSULPHITE.—9d. per lb.

LITHOPHONE, 30%.—£22 10s. per ton.

MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton, f.o.r. London.

SULPHUR.—£9 to £11 per ton, according to quality.

SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.

SULPHUR PRECIP. B.P.—£55 to £60 per ton.

THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb., carriage paid.

THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.

VERMILION, PALE OR DEEP.—7s. to 7s. 2d. per lb.

ZINC SULPHUR.—11d. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£39 per ton ex wharf London in glass containers.

ACID, ACETYL SALICYLIC.—2s. 4½d. to 2s. 5d. per lb.

ACID, BENZOIC, B.P.—2s. to 3s. 3d. per lb., according to quantity. Solely ex Gum, 1s. 3d. to 1s. 6d. per oz., according to quantity.

ACID, BORIC B.P.—Crystal, 36s. to 39s. per cwt.; powder, 40s. to 43s. per cwt.; extra fine powder, 42s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.
ACID, CAMPHORIC.—19s. to 21s. per lb.
ACID, CITRIC.—2s. 8d. to 3s. per lb.
ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.
ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d. 10½d. per lb.
ACID, SALICYLIC, B.P. PULV.—1s. 4d. to 1s. 6d. per lb. Technical.—10½d. to 11½d. per lb.
ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.
ACID, TARTARIC.—1s. 4½d. per lb., less 5%.
ACETANILIDE.—1s. 5d. to 1s. 8d. per lb. for quantities.
AMIDOL.—7s. 6d. to 9s. per lb., d/d.
AMIDOPYRIN.—7s. 9d. to 8s. per lb.
AMMONIUM BENZOATE.—3s. 3d. to 3s. 6d. per lb., according to quantity. 18s. per lb. ex Gum.
AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated, 1s. per lb.
ATROPINE SULPHATE.—9s. per oz.
BARBITONE.—5s. 9d. to 6s. per lb.
BENZONAPHTHOL.—3s. to 3s. 3d. per lb. spot.
BISMUTH CARBONATE.—9s. 9d. per lb.
BISMUTH CITRATE.—9s. 3d. per lb.
BISMUTH SALICYLATE.—8s. 9d. per lb.
BISMUTH SUBNITRATE.—8s. 3d. per lb.
BISMUTH NITRATE.—Cryst. 5s. 9d. per lb.
BISMUTH OXIDE.—12s. 3d. per lb.
BISMUTH SUBCHLORIDE.—10s. 9d. per lb.
BISMUTH SUBGALLATE.—7s. 9d. per lb. Extra and reduced prices for smaller and larger quantities of all bismuth salts respectively.
BISMUTHI ET AMMON LIQUOR.—Cit. B.P. in W. Qts. 1s. 0½d. per lb.; 12 W. Qts. 11½d. per lb.; 36 W. Qts., 11d. per lb.
BORAX B.P.—Crystal, 24s. to 27s. per cwt.; powder, 25s. to 28s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.
BROMIDES.—Ammonium, 1s. 11½d. to 2s. 1d. per lb.; potassium, 1s. 8½d. to 1s. 9½d. per lb.; sodium, 1s. 10½d. to 2s. per lb.; granulated, ½d. per lb. less; all spot. Large quantities at lower rates.
CALCIUM LACTATE.—B.P., 1s. 2d. to 1s. 4d. per lb.
CAMPHOR.—Refined flowers, 2s. 11d. to 3s. per lb., according to quantity; also special contract prices.
CHLORAL HYDRATE.—3s. 2d. to 3s. 4d. per lb.
CHLOROFORM.—2s. 5½d. to 2s. 7½d. per lb., according to quantity.
CREOSOTE CARBONATE.—6s. per lb.
ETHERS.—S.G. ·730—11d. to 1s. 0d. per lb., according to quantity; other gravities at proportionate prices.
FORMALDEHYDE, 40%.—37s. per cwt., in barrels ex wharf.
GUAIACOL CARBONATE.—4s. 6d. to 4s. 9d. per lb.
HEXAMINE.—1s. 11d. to 2s. 2d. per lb.
HOMATROPINE HYDROBROMIDE.—30s. per oz.
HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.
HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. Winchesters, 2s. 11d. per gall. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 4s. per gall.
HYDROQUINONE.—3s. 9d. to 4s. per lb., in cwt. lots.
HYPOPHOSPHITES.—Calcium, 3s. 3d. per lb., for 28 lb. lots; potassium, 3s. 7d. per lb.; sodium, 3s. 6d. per lb.
IRON AMMONIUM CITRATE.—B.P., 2s. 11d. to 3s. 2d. per lb. Green, 3s. 4d. to 3s. 7d. per lb.; U.S.P., 3s. to 3s. 3d. per lb.
IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.
IRON QUININE CITRATE.—B.P., 8½d. to 9½d. per oz.
MAGNESIUM CARBONATE.—Light commercial, £31 per ton net.
MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb.
MENTHOL.—A.B.R. recrystallised B.P., 24s. 6d. per lb. net; Synthetic, 9s. to 10s. per lb.; Synthetic detached crystals, 9s. to 12s. 6d. per lb., according to quantity; Liquid (95%), 9s. 6d. per lb.
MERCURIALS B.P.—Up to 1 cwt. lots, Red Oxide, crystals, 8s. 4d. to 8s. 5d. per lb., levig., 7s. 10d. to 7s. 11d. per lb.; Corrosive Sublimate, Lump, 6s. 7d. to 6s. 8d. per lb., Powder, 6s. to 6s. 1d. per lb.; White Precipitate, Lump, 6s. 9d. to 6s. 10d. per lb., Powder, 6s. 10d. to 6s. 11d. per lb., Extra Fine, 6s. 11d. to 7s. per lb.; Calomel, 7s. 2d. to 7s. 3d. per lb.; Yellow Oxide, 7s. 8d. to 7s. 9d. per lb.; Persulph., B.P.C., 6s. 11d. to 7s. per lb.; Sulph. nig., 6s. 8d. to 6s. 9d. per lb. Special prices for larger quantities.
METHYL SALICYLATE.—1s. 3d. to 1s. 6d. per lb.
METHYL SULPHONAL.—8s. 9d. to 9s. per lb.
METOL.—9s. to 11s. 6d. per lb. British make.
PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.
PARALDEHYDE.—1s. 4d. per lb.
PHENACETIN.—2s. 5d. to 2s. 8d. per lb.
PHENAZONE.—3s. 9d. to 4s. per lb.
PHENOLPHTHALEIN.—6s. to 6s. 3d. per lb.
POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—94s. per cwt., less 2½ per cent.
POTASSIUM CITRATE.—B.P.C., 2s. 9d. to 3s. per lb.
POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.
POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity.
POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included, f.o.r. London.
POTASSIUM PERMANGANATE.—B.P. crystals, 5½d. per lb., spot.
QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz., bulk in 100 oz. tins.
RESORCIN.—2s. 10d. to 3s. per lb., spot.
SACCHARIN.—47s. per lb.; in quantity lower.
SALOL.—2s. 3d. to 2s. 6d. per lb.
SODIUM BENZOATE, B.P.—1s. 8d. to 1s. 11d. per lb.
SODIUM CITRATE, B.P.C., 1911—2s. 6d. to 2s. 9d. per lb., B.P.C. 1923—2s. 10d. to 3s. per lb. U.S.P., 2s. 9d. to 3s. per lb., according to quantity.
SODIUM FERROCYANIDE.—4d. per lb., carriage paid.
SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 per ton, d/d consignee's station in 1-cwt. kegs.
SODIUM NITROPRUSSIDE.—16s. per lb.
SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—95s. to 100s. per cwt. Crystals, 4s. per cwt. extra.
SODIUM SALICYLATE.—Powder, 1s. 6d. to 1s. 7d. per lb. Crystal, 1s. 7d. to 1s. 8d. per lb.
SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 1d. per lb.
SODIUM SULPHITE, ANHYDROUS.—£27 10s. to £28 10s. per ton, according to quantity. Delivered U.K.
SULPHONAL.—6s. 6d. to 6s. 9d. per lb.
TARTAR EMETIC, B.P.—Crystal or powder, 2s. to 2s. 3d. per lb.
THYMOL.—Puriss., 9s. 6d. to 9s. 9d. per lb., according to quantity. Firmer. Natural, 13s. 6d. per lb.

Perfumery Chemicals

ACETOPHENONE.—7s. per lb.
AUBEPINE (EX ANETHOL).—10s. per lb.
AMYL ACETATE.—2s. 6d. per lb.
AMYL BUTYRATE.—4s. 9d. per lb.
AMYL SALICYLATE.—2s. 9d. per lb.
ANETHOL (M.P. 21/22° C.).—5s. 3d. per lb.
BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL—2s. per lb
BENZYL ALCOHOL FREE FROM CHLORINE.—2s. per lb.
BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.
BENZYL BENZOATE.—2s. 3d. per lb.
CINNAMIC ALDEHYDE NATURAL.—15s. 6d. per lb.
COUMARIN.—9s. 6d. per lb.
CITRONELLOL.—13s. 6d. per lb.
CITRAL.—8s. 3d. per lb.
ETHYL CINNAMATE.—6s. per lb.
ETHYL PHTHALATE.—2s. 6d. per lb.
EUGENOL.—10s. per lb.
GERANIOL (PALMAROSA).—21s. per lb.
GERANIOL.—6s. 6d. to 11s. per lb.
HELIOTROPINE.—4s. 9d. per lb.
ISO EUGENOL.—14s. per lb.
LINALOL.—Ex Bois de Rose, 15s. per lb. Ex Shui Oil, 10s. 6d. per lb.
LINALYL ACETATE.—Ex Shui Oil, 14s. 6d. per lb. Ex Bois de Rose, 18s. 6d. per lb.
METHYL ANTHRANILATE.—8s. 6d. per lb.
METHYL BENZOATE.—4s. per lb.
MUSK KETONE.—35s. per lb.
MUSK XYLOL.—7s. per lb.
NEROLIN.—3s. 6d. per lb.
PHENYL ETHYL ACETATE.—11s. per lb.
PHENYL ETHYL ALCOHOL.—10s. 6d. per lb.
RHODINOL.—40s. per lb.
SAFROL.—1s. 4d. per lb.
TERPINEOL.—1s. 6d. per lb.
VANILLIN.—16s. 6d. per lb.

Essential Oils

ALMOND OIL.—Foreign S.P.A., 10s. 6d. per lb.
ANISE OIL.—2s. 9d. per lb.
BERGAMOT OIL.—24s. per lb.
BOURBON GERANIUM OIL.—22s. per lb.
CAMPHOR OIL.—9d. per lb.
CANANGA OIL, JAVA.—12s. per lb.
CINNAMON OIL LEAF.—6s. 9d. per oz.
CASSIA OIL, 80/85%.—7s. per lb.
CITRONELLA OIL.—Java, 2s. 2d. per lb., c.i.f. U.K. port. Ceylon, pure, 2s. 2d. per lb.
CLOVE OIL (PURE 90/92%).—7s. 3d. per lb.
EUCALYPTUS OIL, AUSTRALIAN, B.P. 70/75%.—2s. per lb.
LAVENDER OIL.—Mont Blanc, 48/50%, Esters, 16s. 3d. per lb.
LEMON OIL.—15s. per lb.
LEMONGRASS OIL.—4s. per lb.
ORANGE OIL, SWEET.—20s. per lb.
OTTO OF ROSE OIL.—Anatolian, 35s. per oz. Bulgarian, 75s. per oz.
PALMA ROSA OIL.—13s. per lb.
PEPPERMINT OIL.—Wayne County, 16s. per lb.; Japanese, 9s. 3d. per lb.
PETITGRAIN.—8s. 9d. per lb. Sandalwood, Mysore, 26s. 6d. per lb., 90/95%, 16s. 6d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, October 4, 1928.

THERE has been an even better demand since our last report and export trade has also been good.

General Chemicals

ACETONE is still in short supply at £74 10s. to £77 10s. per ton, with a very firm position.

ACID ACETIC is unchanged.

ACID FORMIC is a little easier at £45 per ton for the 85% and in good demand.

ACID LACTIC.—Demand is improving with unchanged prices.

ACID OXALIC.—Demand remains steady at last quoted prices.

ACID TARTARIC.—Price firm with demand moderate.

AMMONIUM CHLORIDE is unchanged.

ALUMINA SULPHATE.—Demand is good and higher prices are expected.

BARIUM CHLORIDE.—Stocks are still short and forward price very firm.

COPPER SULPHATE.—Price is higher and the market is firm.

CREAM OF TARTAR remains unchanged at last quoted prices.

FORMALDEHYDE is unchanged at £39 per ton, ex wharf, London and the demand is good.

LEAD ACETATE remains unchanged with demand moderate.

LEAD NITRATE is unchanged at £36 to £36 10s. per ton.

LIME ACETATE remains unchanged with a moderate demand.

METHYL ACETONE is unchanged.

POTASSIUM CARBONATE.—Demand good at £27 to £27 per ton.

POTASSIUM CHLORATE.—A much better demand has been experienced with price firm at last quoted figures.

POTASSIUM PERMANGANATE is steady at round about 5½d. per lb.

POTASSIUM PRUSSIATE is firm and higher prices are expected.

SODIUM ACETATE remains unchanged at about £22 per ton.

SODIUM PRUSSIATE is in short supply at 4½d. to 5d. per lb.

SODIUM PHOSPHATE is unchanged at £12 per ton, with a moderate demand.

TARTAR EMETIC, at 10¾d. per lb., has a steady demand.

ZINC SULPHATE.—£11 10s. to £15 per ton.

Coal Tar Products

The coal product market in general is quiet, but there is more inquiry for solvents and benzols. The remaining coal tar products are unchanged, however, and prices are as follows :—

MOTOR BENZOL.—1s. 6d. per gallon on rails, naked, and quantities available are not too plentiful.

SOLVENT NAPHTHA remains firm at 1s. 1½d. per gallon, on rails.

HEAVY NAPHTHA is firm at 1s. 1d. to 1s. 1½d. per gallon, on rails.

CREOSOTE OIL remains weaker, and can be bought at 5¾d. per gallon, f.o.r. in the North, and at 6¼d. per gallon in London.

CRESYLIC ACID is still weak, the 98/100% quality being quoted at 2s. 2d. per gallon, f.o.b., and the dark quality, 95/97%, is quoted at 1s. 10d. per gallon, f.o.b., naked.

NAPHTHALENES are steady, at £5 per ton for the 74/76 quality, and £6 to £6 10s. per ton for the 76/78 quality, with an upward tendency.

PITCH remains dull with scarcely any change in the position; in the absence of buying demand, prices still vary between 40s., to 47s. 6d. f.o.b.

Latest Oil Prices

LONDON.—October 3.—LINSEED OIL was steady but quiet. Spot ex mill, £29 10s.; October to December, £28 5s.; January-April, £28 10s.; and May-August, £28 15s., naked. RAPE OIL steady. Crude extracted, £40 10s.; technical refined, £42 10s., naked, ex wharf. COTTON OIL was firm, and 5s. per ton higher. Egyptian, crude, £30 15s.; refined common edible, £36 5s.; and deodorized, £38 5s., naked, ex mill. TURPENTINE was quiet. American, spot, 52s. 6d.; November-December, 43s. 3d.; and January-April, 44s. 6d. per cwt.

HULL, October 3.—LINSEED OIL.—Spot to December, £28 17s. 6d.; January-April to May-August, £28 15s. per ton, naked. COTTON OIL.—Bombay, crude, £29 10s.; Egyptian, crude, £30 5s.; edible refined and technical, £33 10s; deodorized, £35 10s. per ton, naked. PALM KERNEL OIL.—Crushed, 5½ per cent., £37 5s. per ton, naked. GROUNDNUT OIL.—Crushed extracted, £37 10s.; deodorized, £41 10s. per ton. SOYA OIL.—Extracted and crushed, £32 10s.; deodorized, £36 per ton. RAPE OIL.—Crude extracted, £40 10s.; refined, £42 10s. per ton. TURPENTINE.—Spot, 47s. per cwt., net cash terms, ex mill. CASTOR OIL and COD OIL unaltered.

THE FOREIGN DELEGATES to the Fuel Conference entertained the British Committee of the Conference to dinner on Tuesday at the Hyde Park Hotel.

MR. W. J. COURTAULD, a director of Courtaulds, Ltd., who recently presented Braintree with a new town hall costing £140,000, has commissioned Mr. Maurice Greiffenhagen, R.A., to decorate the interior of the council chamber.

CHARLES FREDERICK SLOW, a Northampton boy, 17 years of age, has commenced his duties as research assistant in the leather section of the British Dyestuffs Corporation at Blackley, Manchester, at a salary of £250 a year. Starting his education at a Northampton elementary school, he later went to a local intermediate school, and won a scholarship to the leather department of Northampton Technical College. There he won four first-class "firsts" and the Wren gold medal.

THE DIRECTORS of Ruth's Steam Storage have decided to purchase the sole rights for the U.S.A., Canada, and Newfoundland in respect of the Ruth's Steam Accumulator, the Ruth's High Pressure Accumulator, and the Ruth's High Pressure Boiler. In order to form and finance separate American and Canadian companies for the development of these rights, it has been decided to increase the capital to £500,000 by the creation of 200,000 additional "A" ordinary shares of £1. It is proposed to offer to present "A" ordinary shareholders one new share at 25s. for every four shares held, and to place an additional 80,000 shares with commercial and financial groups.

Nitrogen Products

Sulphate of Ammonia.—The market for this product continues firm at £9 8s. 9d per ton f.o.b. U.K. port for prompt shipment. The large foreign markets continue to make good purchases. The continental demand is also reported to be good. It has been reported in the Press that the German producers have, on account of additional freight charges, raised their nitrogen prices by 5 per cent. This is erroneous; the increase actually is ¼% and amounts to just over 1s. per ton on sulphate of ammonia. As the German producers quote on an f.o.r. basis, actually their prices are unaltered, but the consumers have to pay an extra 1s. per ton for their sulphate. The home market continues dull and uninteresting.

Nitrate of Soda.—It is reported that the new methods of sale, together with the low prices, are working smoothly, and that large orders continue to reach the selling organisations. As a consequence optimism prevails in nitrate circles. It has now been stated that the American nitrate producers who have stood out of the central sales organisation have done so not because they are unwilling to co-operate but because of the fear that the anti-trust laws in the United States may involve them in penalties if they join.

South Wales By-Products

THERE is scarcely any change to report in South Wales by-product activities. Business generally is on a very moderate scale, but the tendency appears to incline towards a brisker demand. Pitch is in slightly better demand, but values are unchanged on the basis of 42s. 6d. to 46s. per ton, f.o.b. Crude tar has a steady, but moderate call with values unchanged. Refined tars continue to be in fairly good demand, gasworks tar changing hands at from 7¼d. to 7¾d. per gallon, delivered, and coke oven tar at from 7¾d. to 8d. per gallon delivered. Crude naphthalene is unchanged round about the 80s. per ton f.o.r., maker's works mark, while whizzed stand at about 90s. per ton f.o.r. maker's works. Patent fuel and coke exports are improving, but prices are firm. Patent fuel, ex-ship Cardiff, remains at from 20s. to 21s. 6d. per ton; ex-ship Swansea, 19s. 6d. to 20s. 6d. per ton. Coke, best foundry, 32s. 6d. to 37s. per ton; furnace, from 19s. to 21s. per ton, and other sorts from 25s. to 32s. 6d. per ton. Oil imports into Swansea over the last four weeks period amounted to 17, 832,955 gallons.

Calcium Cyanamide 20.6% N

A VERY steady demand is now being made for this fertilizer for autumn use on grassland and corn. The farmers' price for October delivery, for 4-ton lots, will be £9 4s. carriage paid to any railway station in Great Britain.

Increase in Price of Mercurials

MAY AND BAKER, LTD., announce that the further rises in the price of quicksilver oblige them to advance the price of mercurials by 6d. per lb. They add that the market indication is that dearer metal is not unlikely.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinion.

GLASGOW, *October* 3, 1928.

THE heavy chemical market during the past week has not been marked by any important changes in prices, and the quantity of material asked for has been moderate. Acetone is still scarce at the advanced prices.

Industrial Chemicals

ACETONE, B.G.S.—Nominally £74 10s. to £77 10s. per ton, ex wharf, but practically none available for immediate delivery.

ACID ACETIC, 98/100%.—Glacial, £56 to £67 per ton according to quality and packing, c.i.f. U.K. ports; 80% pure £37 10s. per ton, ex wharf; 80% technical, £37 10s. per ton, ex wharf.

ACID BORIC.—Crystals, granulated or small flakes, £30 per ton. Powder, £32 per ton packed, in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—Price maintained at 6½d. per lb., delivered or f.o.b. U. K. ports, in moderate demand.

ACID CITRIC, B.P. CRYSTALS.—Nominally 2s. 4d. per lb., less 5%, ex wharf, but practically unobtainable for immediate delivery.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. per carboy. Dearsenicated quality, 5s. 6d. per carboy, ex works, full wagon loads.

ACID NITRIC, 80°.—£24 10s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—On offer from the Continent at 3¼d. per lb., ex wharf. Spot material quoted 3½d. per lb., ex store. In better demand.

ACID SULPHURIC.—£2 15s. per ton, ex works, for 144° quality; £5 15s. per ton for 168° quality. Dearsenicated quality, 20s. per ton extra.

ACID TARTARIC, B.P. CRYSTALS.—Quoted 1s. 4½d. per lb., less 5%, ex wharf. Offered for prompt shipment at 1s. 4d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE.—On offer at £5 10s. per ton, c.i.f. U.K. ports. Spot material quoted £5 15s. per ton, ex store.

ALUM, LUMP POTASH.—Quoted £8 7s. 6d. per ton, c.i.f. U.K. ports, prompt shipment from the Continent. Crystal meal quoted £8 10s. per ton, ex store.

AMMONIA, ANHYDROUS.—Quoted 9½d. per lb., carriage paid. Containers extra and returnable.

AMMONIA CARBONATE.—Lump, £37 per ton; powdered, £39 per ton, packed in 5 cwt. casks, delivered or f.o.b. U.K. ports.

AMMONIA, LIQUID, 880°.—Unchanged at about 2½d. to 3d. per lb., delivered. According to quality.

AMMONIA MURIATE. Grey galvanisers' crystals of British manufacture quoted £21 to £22 per ton, ex station. Fine white crystals offered from the Continent at about £17 5s. per ton, c.i.f. U.K. ports.

ANTIMONY OXIDE, 98/100%.—On offer for prompt shipment from China at £39 10s. per ton, ex wharf.

ARSENIC, WHITE POWDERED.—Quoted £18 10s. per ton, ex wharf, prompt despatch from mines. Spot material on offer at £19 15s. per ton, ex store.

BARIUM CARBONATE, 98/100%.—English material on offer at £7 5s. per ton, ex store. Continental quoted £7 per ton, c.i.f. U.K. ports.

BARIUM CHLORIDE.—Scarce for immediate delivery and spot price about £10 10s. per ton, ex wharf. Offered for prompt shipment from the Continent at £7 15s. per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—British manufacturers' contract price to consumers, £6 12s. 6d. per ton, delivered minimum 4 ton lots. Continental on offer at £6 10s. per ton, ex wharf.

CALCIUM CHLORIDE.—British manufacturers' price, £4 5s. to £4 15s. per ton, according to quantity and point of delivery. Continental material on offer at £3 12s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works or £4 12s. 6d. per ton, f.o.b. U.K. ports for export.

COPPER SULPHATE.—Continental material rather higher at about £24 5s. per ton, c.i.f. U.K. ports. Some spot parcels on offer at about £23 per ton, ex store.

FORMALDEHYDE, 40%.—Quoted £35 10s. per ton, c.i.f. U.K. ports. Spot material on offer at £38 per ton, ex store.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental quoted £2 15s. per ton, c.i.f. U.K. ports.

LEAD, RED.—Spot material available at about £30 10s. per ton, ex store. Offered at £29 per ton, c.i.f. U.K. ports.

LEAD, WHITE.—£35 15s. per ton, c.i.f. U.K. ports.

LEAD ACETATE.—White crystals quoted £41 15s. per ton, ex store. Brown on offer at about £40 per ton, ex store.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store. In moderate demand.

METHYLATED SPIRIT.—Industrial quality 64 O.P. quoted 1s. 4d. per gallon, less 2½% delivered.

POTASSIUM BICHROMATE.—4⅛d. per lb. delivered, minimum 4-ton lots. Under 4 ton lots, ⅛d. per lb. extra.

POTASSIUM CARBONATE, 96/98%.—Offered from the continent at £25 per ton, c.i.f. U.K. ports. Spot material available at £26 per ton, ex store.

POTASSIUM CHLORATE, 99¼/100%, POWDER.—Quoted £23 per ton c.i.f. U.K. ports. Crystals, 20s. per ton extra.

POTASSIUM NITRATE. — Refined granulated quality quoted £19 2s. 6d. per ton, c.i.f. U.K. ports. Spot material on offer at about £20 10s. per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 5¼d. per lb., ex wharf.

POTASSIUM PRUSSIATE (YELLOW).—Offered from the continent at 6¼d. per lb., ex wharf, prompt shipment. Spot material quoted 6⅝d. per lb., ex store.

SODA CAUSTIC.—Powdered, 98/99%, £17 17s. 6d. per ton; solid, 76/77%, £14 10s. per ton, and 70/72%, £13 12s. 6d. per ton, minimum, 4-ton lots, carriage paid on contract. Spot material, 10s. per ton extra.

SODIUM ACETATE.—On offer for prompt delivery at about £21 5s. per ton, ex store.

SODIUM BICARBONATE.—Refined recrystallised £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM BICHROMATE.—Quoted 3d. per lb. delivered buyers' works, minimum 4-ton lots. Under 4 and over 2-ton lots, 1/16d. per lb. extra. Under 2-ton lots, 3⅛d. per lb.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station. Powdered or pea quality, 27s. 6d. per ton extra. Light soda ash, £7 3s. 9d. per ton, ex quay, minimum 4-ton lots with various reductions for contracts.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £8 17s. 6d. per ton, ex station, minimum 4-ton lots. Pea crystals on offer at £14 15s. per ton, ex station, minimum 4 ton lots.

SODIUM NITRITE, 100%.—Quoted £19 10s. per ton, ex store.

SODIUM PRUSSIATE.—In moderate demand. Spot material quoted 4¾d. per lb., ex store.

SODIUM SULPHATE (SALTCAKE).—Prices, 50s. per ton, ex works, 52s. 6d. per ton, delivered for unground quality. Ground quality, 2s. 6d. per ton extra.

SODIUM SULPHIDE.—Prices for home consumption; solid, 60/62%, £9 per ton; broken, 60/62%, £10 per ton; crystals, 30/32%, £7 2s. 6d. per ton, delivered buyers' works on contract, minimum 4-ton lots. Special prices for some consumers. Spot material, 5s. per ton extra.

SULPHUR.—Flowers, £12 per ton; roll, £10 15s. per ton; rock £10 12s. 6d. per ton; ground American, £9 5s. per ton, ex store.

ZINC CHLORIDE, 98%.—British material now quoted £22 10s. per ton, f.o.b. U.K. ports.

ZINC SULPHATE.—Offered from the continent at about £10 5s. per ton, ex wharf.

NOTE.—The above prices are for bulk business, and are not to be taken as applicable to small parcels.

The British Industries Fair

SPACE in the London Section of the British Industries Fair, to be held at White City from February 18 to March 1, 1929, is being booked up more quickly than ever before, the total stand area reserved up to date exceeding 230,000 sq. ft. as compared with 191,000 sq. ft. at the same time last year. The Empire Marketing Board's display will include Canada for the first time, and the Canadian Government, in addition, has taken a whole new hall with 7,000 sq. ft. of stand space for a display by Canadian manufacturers.

Apart from the addition of that hall to the Fair area, the huge Machinery Hall, which has not been used before, being taken in. That means an addition of 100,000 sq. ft. To link up the Machinery Hall with the previous Fair buildings, the Fair authorities intend to build a new hall or corridor 60 ft. wide. Replies to the Government's preliminary invitation to important overseas buyers to visit the Fair are now coming in, and the countries from which acceptances have already been received include Holland, Belgium, Germany, Syria, Persia, Java, Sumatra, Australia, China, Japan, Chile and Uruguay. Some of the United States trade buyers and principals of firms were particularly pleased at the profitable business they were able to transact at the last Fair, and, as a result it is likely that they will come in increasing numbers next February.

Manchester Chemical Market

(From Our Own Correspondent.)

Manchester, October 4, 1928.

Except in one or two more or less isolated instances where price recessions have occurred the tone of the chemical market generally keeps remarkably steady. To some extent conditions are still patchy, but most traders this week have experienced a fair volume of inquiry. With regard to actual business, deliveries against contracts are being called for fairly regularly, and there is a moderate sprinkling of small orders being placed on the spot market.

Heavy Chemicals

Prussiate of soda meets with a quietly steady demand, and offers of this material are fully maintained at from 4½d. to 5¼d. per lb., according to quantity. Alkali is moving off in fair quantities on a contract basis of £6 2s. 6d. per ton, with bicarbonate of soda, which is currently quoted at about £10 10s. per ton, in a somewhat similar position. There is some inquiry about for phosphate of soda, offers of which keep steady at up to £12 10s. per ton. Inquiry for bichromate of soda is on a moderate scale, and at 3d. to 3¼d. per lb. there has been little change in the price situation. Buying interest in chlorate of soda continues on rather slow lines, with current offers at from 2¾d. per lb., according to quantity. A quiet business is being put through in the case of sulphide of sodium, with offers of 60-65 per cent. concentrated solid material at £9 to £9 10s. per ton and of commercial at up to £8. Bleaching powder is selling in fairly steady quantities at from £6 10s. to £7 per ton, according to make. Contract offers of saltcake are still on the basis of £2 12s. 6d. per ton and a moderate demand has been reported this week. With regard to caustic soda, this is selling in regular quantities at from £13 7s. 6d. to £15 7s. 6d. per ton, according to quantity. Sales of hyposulphite of soda are on the quiet side but values have been pretty well held at about £15 5s. per ton for the photgraphic material and £9 for the commercial quality.

There is a quietly steady demand about for yellow prussiate of potash, quotations for which range from 6¾d. to 7¼d. per lb. according to quantity. For permanganate of potash inquiry has been rather slow during the past few days, with offers of B.P. at about 5⅛d. per lb. and commercial grade at 4¾d. per lb. There is a moderate amount of buying interest being shown in the case of caustic potash, values of which keep steady at £33 5s. per ton for prompt delivery of one to five-ton lots. A quiet trade is passing in chlorate of potash at from 2¾d. to 3d. per lb. Bichromate of potash is fully maintained at round 4⅛d. per lb., and fair sales are being made. Carbonate of potash keeps steady and in moderate request at £25 to £25 5s. per ton.

The demand for arsenic this week has been about up to its recent level, with offers of this material varying between £16 15s. and £17 per ton, on rails, for white powdered, Cornish makes. Sulphate of copper is being disposed of in moderate qnantities and at round £25 5s. per ton, fo.b., the tendency seems to be steady. Quotations for nitrate of lead are on a lower basis at from £34 to £35 per ton, with white acetate unchanged on the week at £40 10s. per ton and brown at £39 10s. Although sales of acetate of lime have been of somewhat limited extent offers are on the short side and prices firm at £16 10s. per ton for grey and £8 15s. to £9 for brown.

Acids and Tar Products

Stocks of citric acid are extremely restricted and quotations are largely nominal at up to 2s. 9d. per lb. The demand for tartaric acid at the moment is on the quiet side, but prices are held at about 1s. 4¼d. per lb. A moderate trade has been reported in the case of acetic acid at steady values, with 80 per cent. commercial at £36 per ton and glacial at £66 10s. Oxalic acid is in quiet request but unchanged on the week at 3¼d. to 3½d. per lb.

Pitch prices continue to display an easy tendency at about £2 2s. 6d. per ton, f.o.b., with business restricted. Creosote oil, also, is in comparatively quiet demand at about 6d. per gallon. Crude carbolic acid is slow but unchanged at 2s. to 2s. 1d. per gallon, with crystallised material in fairly good request at round 6½d. per lb. A moderate business is passing in solvent naphtha at 1s. 1d. per gallon.

Manufacturing Chemists' Affairs

Described in the receiving order as manufacturing chemists, the firm of S. H. Travis and Co., of 33, King's Road, St. Pancras, London, has carried on business as chemical merchants, and a sitting for public examination of the debtors was appointed on Tuesday in the London Bankruptcy Cour before Mr. Registrar Mellor. Mr. Vincent Armstrong, Assistan Official Receiver, said that the receiving order was made on July 12, and up to the present only one debtor had attended under it. He had stated that he had a partner who was a brother, but in reality he was only a nominal partner, having advanced money to the firm. At the moment the brother was in the Belgian Congo, and it was understood that there was a chance of a composition scheme being submitted. No statement of affairs had yet been filed, and, of course, a man in the Belgian Congo was not in a position to submit one. He (the Official Receiver) was as yet unaware what was the amount of the liabilities or of the assets, and in his opinion it was unfair that the case should be held up as it was through the non-submission of such a document by the only debtor in this country. The brother had not yet been adjudged a bankrupt, and the application necessary was still pending. In answer to His Honour, Sidney Herbert Travis, who was the debtor in attendance, said that the statement of affairs was in course of preparation. The Official Receiver remarked that he considered that a man who had been in business should be able to give him some idea of his liabilities and of his assets, and he asked for an adjournment of the public examination until November 27 with an order on the debtor to lodge his statement of affairs. This application His Honour granted, making an order for the statement to be lodged within 14 days.

Dyestuffs Licenses

The following statement relating to applications for licences under the Dyestuffs (Import Regulation) Act, 1920, made during September has been furnished to the Board of Trade by the Dyestuffs Advisory Licensing Committee. The total number of applications received during the month was 575, of which 487 were from merchants or importers. To these should be added 22 cases outstanding on August 31, making a total for the month of 597. These were dealt with as follows: —Granted, 546 (of which 511 were dealt with within 7 days of receipt); referred to British makers of similar products, 36 (of which 30 were dealt with within 7 days of receipt); outstanding on September 29, 15. Of the total of 597 application received, 511, or 91 per cent., were dealt with within 7 days of receipt.

Conference on Olive Oil Industry

The Ninth International Conference on the olive oil industry will take place at Tunis, Sousse and Sfax from October 26 to November 8. Application to attend should be made to the Président de la Commission d'Organisation du Congrès, Direction Générale de l'Agriculture, Tunis. The application should be accompanied by the sum of 50 francs, which represents the contribution fee, and entitles the applicant to a copy of the Report of the Conference. Delegates of Governments invited to attend are exempted from this payment. The programme to be followed will deal with olive production, the olive industry and the olive oil and olive preserve trades. Excursions to the various olive producing areas will also be made at a reasonable price, including hotel and transport charges and gratuities.

John Benn Hostel Ballot: Closing Date

The Boys' Ballot will close for judging on Monday, December 31, 1928, and the full list of prize winners will be published in *The Daily Telegraph* of February 20, 1929. No entries can be accepted after 14 days from the closing date. It is felt that many of our readers will welcome the opportunity to do good work in ticket selling over the Christmas season, and all who wish to participate in the £1,500 prize list, containing a standard saloon motor car, trips abroad, valuable furniture, gramophones, aerial flights, and over 350 other attractive gifts, should send without delay for tickets, 1s. each (10s. for a book of 11) to the Ballot Organiser, c/o Sir Ernest Benn, Bouverie House, Fleet Street, London, E.C.4.

Company News

RECKITT AND SONS.—A quarterly interim dividend of 3¾ per cent., less tax, was payable on October 1 on the ordinary shares.

LEVER BROTHERS.—The Board have declared an interim dividend of 2½ per cent. (actual) on the ordinary shares on account of the year 1928.

BRITISH PORTLAND CEMENT MANUFACTURERS.—The directors announce an interim dividend on the ordinary shares of 5 per cent. actual, less tax, in respect of the year to December 31, 1928, payable on October 15 to holders on the register on October 1, 1928.

NITRATE RAILWAYS CO., LTD.—The directors have resolved that an interim dividend at the rate of 2 per cent., *i.e.*, 4s. per share, less income tax, be declared payable on November 6, 1928, on the ordinary (unconverted) and the preferred converted ordinary shares.

BELL'S UNITED ASBESTOS CO., LTD.—The directors have declared an interim dividend on the ordinary shares of 1s. per share, being 5 per cent. (actual), less income tax, on account of the current year. The dividend will be paid on October 15 to shareholders on the register on September 29, and the ordinary share transfer books will be closed from October 1 to 13, both dates inclusive.

BENZOL AND BY-PRODUCTS.—The directors have advised the shareholders that, owing to the state of the coal, coke and allied trades, they are unable at present to sanction any further payment of dividend in respect of the preference shares. During 1927 eighteen months' dividend was paid, leaving dividend in arrear from October 1, 1926, and a credit balance of 5,236 was carried forward, against £553 brought in.

CHESHIRE UNITED SALT.—For the period ended June 30, 1928, the report states that the works were only taken over in March, 1927, and full benefit of amalgamation and factory extensions only became effective during latter part of period under review. The profit and loss account shows, subject to income tax, a net profit of £5,108, from which is deducted preliminary expenses £2,398, leaving £2,710, which the directors propose to carry forward. Having regard to workings to date and prospects for current year, the directors have authorised the payment of an interim dividend of 2½ per cent. to all shareholders registered on October 6, 1928.

BRITISH CYANIDES.—The report for the year ended June 30, 1928, states that the issued ordinary capital of the company has been increased during the period by the creation of 1,585,224 shares, 92,405 of which have been converted from preference shares at the request of the holders. The total number of preference shares now converted into ordinary shares is 107,325. The net profit for the year is £4,447, from which must be deducted the balance of loss, £946 brought forward, and the amount distributed in dividend paid on the preference shares, £1,618, together with Rock Investment Co.'s percentage thereon, £32, leaving £1,850 to be carried forward. The annual meeting will be held at Cannon Street Hotel, London, E.C., on October 10, at 12 noon.

Natural Gas Strike in Turner Valley

THE Natural Resources and Industrial Information Bureau of Canada announces that according to an official of the Imperial Oil Co., Ltd., an enormous flow of naphtha-laden gas has been struck in McLeod No. 4 Well in the Turner Valley Oil Field, south-west of Calgary, Alberta. Measured after the first gush had quietened down, the flow registered at the rate of 34,500,000 cubic ft. daily. The Government test of the well, made later, registered a flow of 20,500,000 cubic ft. per day. The gasoline content has not yet been determined. The measurements made showed the well to be flowing 16,500,000 cubic ft. daily from the limestone and an additional 4,000,000 cubic ft. from above the 8-in. casing. The gas is to be run through a separator as soon as one can be installed in order to enable it to be tested for naphtha content. Assuming that the flow holds and that recovery of naphtha or high-grade natural gasoline is in the same proportion as from the nearby Royalite No. 4, the new well will be the greatest in the field. Royalite No. 4 has so far held the distinction of being the greatest naphtha producer in the British Empire.

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us from official sources by Gee and Co., Patent and Trade Mark Agents, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks, and Designs.

Opposition to the Registration of the following Trade Marks can be lodged up to October 26, 1928.

GELAMON.

494,183. Class 3. Chemical substances prepared for use in medicine and pharmacy. Bayer Products, Ltd., 31 to 34, Basinghall Street, London, E.C.2; merchants and manufacturers.—August 17, 1928.

KEMSOL.

490,959. Class 1. Chemical substances, used in manufactures, photography, or philosophical research, and anti-corrosives. The Chemical and Metallurgical Corporation, Ltd., 701, Salisbury House, London, E.C.2; manufacturers.—April 30, 1928.

Depressed Industries of the North-East

Suggestions for a Research Institute

A PROPOSAL for the establishment of a Research Institute for the benefit of the various industries on the North-East Coast was made by a deputation from the Newcastle and North-East Coast Section of the Institute of Chemistry, which attended the Newcastle and Gateshead Chamber of Commerce on Wednesday.

The deputation consisted of Dr. J. T. Dunn, Professor H. V. A. Briscoe, Professor G. R. Clemo, Mr. L. H. Sensicle, and Mr. F. H. Walker. An important memorandum was placed before the Chamber by Dr. Dunn. He said there were over 100 chemists who were members of the section, and they were unanimously of opinion that one of the most effective and far-reaching remedies for industrial depression was the intensive and persistent prosecution of scientific research on a much larger scale than had hitherto been practised. Remarking that scientific research was absolutely essential, and that industrial research generally, if handled in a bold, scientific, and businesslike manner was a sound and highly profitable investment, Dr. Dunn said that research should be regarded as a vital part of industry and as an essential form of insurance for the stability of industrial organisations, and concluded by suggesting the establishment of a Research Institute, the objects of which would be, *inter alia* :—(1) To classify and render available existing published knowledge bearing on local industries; (2), to consider and, in approved cases, to conduct research upon problems submitted by manufacturers; (3) to effect economies in existing industries in power, raw material, and labour; (4) to develop utilisation of by-products and waste products; (5) to conduct and assist fundamental research with a view to the inception and development of new industries; (6) to train and equip specialists for industrial positions.

Control of the Institute

The Institute should be under the control of a scientist of high attainments and proved ability, as director, assisted by a board of men thoroughly conversant with scientific work and of proved business acumen. They believed the services of a director could be secured for a salary of from £1,200 to £1,500 per annum, and that three or four assistants could be obtained, whose salaries would total approximately £1,000 per annum. The initial cost of establishing and equipping the Institute was estimated at £3,000, and the annual outlay for stores, apparatus and expenditure would be about £2,000. Thus, the scheme required a capital outlay of, say £3,000, and the annual expenditure would be £4,500. Speaking of the Board, Dr. Dunn thought that such men as Dr. Piele, of Priestman Collieries, Dr. Cecil Cochrane, Mr. E. J. George, of Consett Iron Company, Mr. R. W. Clothier, of Reyrolles, Mr. Lancelot Smith, of Smith's Dock, Mr. Clarence Smith, of Consett Iron Company, and Mr. W. A. Woodeson, of Clark Chapman's, would be likely to carry the scheme through to a successful issue. The scheme was favourably received by the Chamber, and it was decided to invite the gentlemen named by Dr. Dunn to meet and make further inquiry with a view to a report at a subsequent meeting.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

Mortgages and Charges

*[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts dus from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]*

ASSOCIATED PRODUCTS, LTD., London, W., manufacturing chemists. (M., 6/10/28.) —Registered September 18, equitable mortgage, to Midland Bank, Ltd., securing all moneys due or to become due to the Bank; charged on 31A, Denmark Road, West Ealing. *Nil. November 11, 1927.

SHEPPY GLUE AND CHEMICAL WORKS, LTD., London, E.C. (M., 6/10/28.) Registered September 18, series of £60,000 debentures, present issue £35,000; charged on properties at Queensborough and Hackney Wick, also general charge. *£4,587 3s. 1d. April 4, 1928.

Satisfaction

RANELAGH DYE WORKS, LTD., Merton (Surrey). (M.S., 6/10/28.) Satisfaction registered September 25, all moneys, etc., registered December 20, 1927.

Receivership

ERNEST GRAY AND CO. (1924), LTD. (R., 6/10/28.) R. Davies, 4, King Street, W.6, was appointed receiver on September 17, 1928, under powers contained in debenture dated March 19, 1927.

London Gazette, &c.

Companies Winding Up Voluntarily

NOBEL INDUSTRIES, LTD. (C.W.U.V., 6/10/28.) At an extraordinary general meeting of the members of the above-named company, duly convened, and held at Nobel House, Buckingham Gate, London, S.W.1, on September 12, 1928, the following resolution was duly passed; and at a subsequent extraordinary general meeting of the said company, also held at Nobel House, on September 28, the same resolution was duly confirmed as a special resolution: "That the company be wound up voluntarily and that E. A. Bingen, Nobel House, Buckingham Gate, London, S.W.1, solicitor, be appointed liquidator."

MARSH (R.), LTD. (C.W.U.V., 6/10/28.) At an extraordinary general meeting of the members of the above-named company, duly convened, and held at 30, Sugar House Lane, Stratford, E.15, on September 19, 1928, the following extraordinary resolution was passed: "That the company cannot, by reason of its liabilities, continue its business; that the company be wound up voluntarily, and that Mr. R. F. Frazer, of 28, The Broadway, London, E.15, Chartered accountant, be and is hereby appointed liquidator."

New Companies Registered

FUEL INDUSTRIES, LTD.—Registered as a "private" company on September 27. Nominal capital of £31,250 in 25,000 preference shares of £1 each and 25,000 ordinary shares of 5s. each. The objects of the company are to carry on the business of producers and converters of raw coal, distillers of shale, extractors and converters of coal products, tar hydrogenators, manufacturers of ammonia, carbonisers of coal or lignite, manufacturers of and dealers in fuel of all kinds, etc. Subscriber: C. G. Cave, 21, Cholmondeley Avenue, Harlesden, London, N.W.10

SOLUBLE OIL PRODUCTS, LTD.—Registered September 27. Nominal capital £500 in £1 shares. Manufacturing, pharmaceutical, analytical and advising chemists, druggists, drysalters, oil and colour men, manufacturers of and dealers in perfumes, etc. A provisional director: E. Duerr, 36, Hawkstone Road, London, S.E.16.

Pittsburgh Bituminous Coal Conference

Further Details

DETAILS are now to hand of the part which will be played by delegates from Great Britain at the Second International Conference on Bituminous Coal, to be held at the Carnegie Institute of Technology in Pittsburgh, November 19-24. They will participate prominently in the discussions of the use of pulverized fuel, coal washing, low temperature distillation, coal liquefaction, and boiler fuels.

Among those who have already accepted invitations to present papers are Dr. R. Lessing, on "The Rational Cleaning of Coal"; Dr. George E. K. Blythe, of the Buell Combustion Co., Ltd., on "Pulverised Fuel Conveying and Firing with Special Reference to Locomotives and Marine Boilers"; Mr. Harald Nielsen, of Sensible Heat Distillation, Ltd., Dr. F. S. Sinnatt, Assistant Director of Fuel Research, Department of Scientific and Industrial Research, and Mr. Charles Turner, of Glasgow, who will speak on various phases of low temperature distillation; Mr. R. H. Crozier, manager, Mineral Oils Extraction, Ltd., who will read a paper on liquefaction; Captain C. J. Goodwin, who will speak on boiler fuels; Mr. Edgar C. Evans, of the National Federation of Iron and Steel Manufacturers; Dr. E. W. Smith, technical director, the Woodall-Duckham Companies; Dr. C. H. Lander, Director of Fuel Research, Department of Scientific and Industrial Research; Dr. J. Ivon Graham, director, Mining Research Laboratory, University of Birmingham; and Colonel Lindemann, of the Anglo-Persian Oil Company. Considerable interest is being taken in the expected appearance of Lord Melchett as one of the speakers. Lord Melchett, it is expected, will speak on a topic of general interest. In all, eighteen foreign countries will be represented at the conference, and more than one hundred of the leading fuel technologists, chemists, and engineers of the world will read papers.

Annual Chemical Dinner

IT is announced by Mr. F. A. Greene, hon. secretary, that the arrangements for the "annual chemical dinner," to be held at the Connaught Rooms on November 9, are proceeding satisfactorily. The gathering will be more comprehensive than on any previous occasions, the bodies co-operating including Chemical Society, Institute of Chemistry, Society of Chemical Industry, Society of Public Analysis, Faraday Society, Biochemical Society, Institution of Petroleum Technologists, Oil and Colour Chemists' Association, Association of British Chemical Manufacturers, and Chemical Industry Club. Dr. G. C. Clayton, M.P., has consented to preside, and will be accompanied by Mrs. Clayton. Mr. W. G. A. Ormsby-Gore, M.P., Parliamentary Under-Secretary of State for the Colonies, will be the guest of the evening.

Tickets, price 12s. 6d. each, for lady or gentleman, including gratuities but not wines, are obtainable from the hon. secretary at the Chemical Industry Club. Dinner will be served at 7.30 p.m.; speeches will be few and short; dancing will begin soon after 9.15 p.m.

Benn Brothers' Other Journals

THE CABINET MAKER.—Consumer credit; Further Autumn Technical Programmes; Kitchen and Domestic Equipment; Design of Light Fittings; Selling with Electric Light.

DISOVERY.—Excavations in Greenland; "The Chemistry of the Stars," by A. Violet Douglas; "Mount Athos To-day," by Robert Byron; Searching for Salt.

THE FRUIT GROWER.—"Condition as a Price Factor," by E. M. Bear; "R.H.S. Autumn Show"; "New Assessments Test Action."

GARDENING ILLUSTRATED.—1928 Sweet Pea Novelties; R.H.S. Autumn Show; Lonicera Nitida as a Hedge Plant; The New R.H.S. Hall.

THE ELECTRICIAN.—The New President of the Institution of Electrical Engineers; Automatic Telephony.

THE GAS WORLD.—Monthly Coking Section; Low Temperature Carbonisation Tests at Treforest Gasworks; World Power Conference.

THE HARDWARE TRADE JOURNAL.—Radio and the Ironmonger; British Made Hardware in Canada; Motor Transport; Some Pitfalls in Working Costs.

THE TIMBER TRADES JOURNAL.—English and Finnish Nerves!; Transport: The Question of Depreciation of Commercial Vehicles; Sawmill: The Problem of Wood Waste—III.